# GENERAL NOTE

Throughout this paper years are described in the way indicated by the following example. Figures of school leavers (and similar flows of people with G.C.E. qualifications) in the educational year 1966-67 are described as '1967'; they refer mainly to leavers in the summer term 1967. Figures of entry to, and places in, higher education institutions in the immediately following academic year, 1967-68, are also described as '1967'. Figures of expenditure in the academic year 1967-68 are shown as '1967-68'.

The following symbols are used in the tables:

– denotes nil or negligible.

. denotes 'not applicable'.

.. denotes 'not available'.

# 1. THE DEMAND FOR HIGHER EDUCATION

1.1 The concept of demand for higher education has been expressed variously as meaning potential students' desire for it, or society's need for it as measured in terms of requirements for qualified manpower or of the total benefits expected from educational investment. A variety of factors, social, cultural and economic, may influence students' desire for higher education. There are direct benefits to individuals in the form of life-time earnings differentials greater than could be expected from innate ability alone. Other direct benefits to individuals may be of a less tangible nature, such as, in the short term, the attractions of student life, and in the longer term additional job satisfaction. Moreover, some of the economic benefits accrue not only to those who have received higher education but often to others also; the productive potential of those who are not highly educated may be increased by working with those who are. In these ways higher education may contribute directly to higher productivity and so to increased national prosperity. Of the wider social benefits, the Robbins Report[1] emphasised the transmission of a common culture and common standards of citizenship. To take full account of all potential gains from increased provision of higher education would require improved methods of assessment which are likely to be developed only gradually over time. The more immediate decisions on new provision must be made in the light of observed student trends, calculations of the more tangible benefits, and qualitative assessments of the less tangible.

1.2 Three main theoretical approaches to the provision of higher education have been enunciated:

- (i) the so-called 'social demand' approach of the Robbins Report (hereafter described more correctly as 'private demand');
- (ii) the rate of return (or investment in human capital) approach;
- (iii) the manpower approach.

Though conceptually distinguishable, these three strands are closely intertwined in reality and should not be regarded as independent approaches. The extent to which they can currently be applied in Government decision-making depends on the degree to which each approach has been developed in theoretical terms and on the availability of appropriate data and measurement techniques.

## Private demand

1.3 Private demand arises from the individual appreciation by each potential student (or his parents) of the benefits which he may obtain from higher education. Each individual may make his own appraisal, objective or subjective, compounding both intangible and tangible benefits. It may include an assessment of the economic gains in later life expected in return for income forgone while studying, as far as his knowledge of the labour market permits. What each individual takes into account cannot readily be ascertained and in general is not subject to Government influence in a direct sense (though it may be influenced by improved careers guidance facilities). Private demand has therefore to be forecast mainly by projecting the aggregate demand pattern observed in the past, allowing for changes in numbers qualified to enter higher education. Where past opportunities to enter higher education have been greater than current opportunities, it will be natural to consider whether to revert to the earlier opportunity rates and apply them to the projected flow of people qualified to enter. The projection of past experience implicitly makes some allowance for the so-called 'generation effect', that is the tendency for parents' aspirations for their children's higher education to rise with the parents' own educational level. The projection necessarily reflects the influence on student demand of the existing structure and financing of the higher education system. While this approach does not make any explicit provision for the economy's requirement of trained manpower, it does make some implicit allowance in as much as private demand for higher education is influenced by impressions of employment opportunities for holders of particular qualifications.

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[1] Report of the Committee on Higher Education, H.M.S.O., Cmnd 2154, 1963.

### Rate of return approach

1.4 The rate of return approach is one application of the concept that education is a form of investment in human capital, improving the quality of labour resources and hence contributing to economic growth.[1] Attempts to estimate this educational contribution to economic growth in the aggregate have raised formidable technical problems.[2] Rather more directly applicable to educational provision is the disaggregate treatment which measures the rate of return to investment in particular educational qualifications. Such a rate of return may be calculated in either private or social terms. The former expresses the relationship between an individual's extra post-tax earnings arising from education and the costs incurred by the individual in obtaining this education (including income forgone while studying); it may be one of the factors affecting the private demand for higher education discussed above. The social rate of return expresses the relationship between benefits and costs for society as a whole. These two rates will not necessarily coincide[3] and it is the social rate of return which is more relevant to decisions about the public provision of higher education facilities.

1.5 Estimates of the social rate of return assume that workers are paid according to their contribution to production, so that the pre-tax earnings of an individual may be taken as representative of his contribution to national income. Differences in earnings attributable to education are thus taken as a measure of the economic benefit of education and compared with the total costs of that education (including forgone earnings), whether privately or publicly financed. To the extent that there are other gains from education besides the direct economic advantages, this approach under-estimates the total social benefits of education; allowances would need to be made for these non-economic benefits in any comparison of the rate of return on education with that on other forms of public investment. Within the education sector, the rate of return technique may be used to compare the benefits of different lengths of schooling,[1] or of different types and levels of qualification[2] or of different subjects of specialisation. The use of rate of return analysis in Britain has hitherto been restricted by lack of data on the earnings associated with educational qualifications, except in a few specialised occupations. But the wide coverage of qualifications recorded in the 1966 Census of Population and the subsequent 'follow-up' enquiry to a sample of the qualified respondents asking for information on their incomes[3] have now begun to provide material for the fuller use of this technique in improving estimates of society's needs for higher education.

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[1] A concept developed in T. W. Schultz – 'Investment in human capital', American Economic Review, Vol. 51, 1961, pages 1-17 and 'Sources of economic growth in the United States and the alternatives before us' – Supplementary Paper No. 13, Committee for Economic Development (New York, 1962).

[2] The aggregate method attributes to education that part of national income growth not explained by increases in physical capital and in labour force numbers. The estimates obtained thereby are indications of possibilities rather than precise calculations, for they are subject both to errors of attribution (as other causal factors may have been involved) and to the compounding of error margins entailed in any calculation involving residuals.

[3] In Britain the public sector pays the larger part of the costs of educational provision; the student and his family the smaller part. The additional income received on account of higher qualifications (the economic return) is divided in the opposite way; the State (through tax) takes the smaller part, the former student (on average) the larger. Thus the private rate of return is likely to exceed the social rate. For example, one very tentative estimate for the returns to a three-year first degree in post-war Britain suggested a private return of 14 per cent per annum as against a social return of 8 per cent. (D. Henderson-Stewart, *Manchester School*, September 1965).

1.6 One of the difficulties in the use of rate of return analysis is to estimate the extent to which higher earnings result from education rather than from superior natural ability, family background or other advantages.[4] Another problem is to make allowance for the fact that earnings differentials reflect not only differences in productivity, but also conventional relativities, professional entry restrictions, and the relatively high proportion of qualified manpower employed in public sector occupations partly isolated from the competitive labour market. An important limitation is that information on earnings differentials is usually obtained by recording at a single date the earnings of qualified people of different ages and then inferring life-time earnings patterns for the holders of particular qualifications. Figures for individuals' past earnings are often difficult to establish, and for their future earnings non-existent, so that the calculated rates of return really reflect the state of the labour market at the time of the income survey. For guidance on educational provision, it is thus desirable to survey earnings over a period of time and to combine rate of return findings with estimates of future demand for particular kinds of educated manpower.

### Manpower approach

1.7 The manpower approach to society's need for higher education is thus complementary to the rate of return approach. Manpower forecasting in this country has begun with a number of unrelated projections of employment supply and demand for a few qualification or occupational groups — such as doctors, teachers, scientists and engineers — although almost invariably without any reference to the price factor. Similar projections have yet to be made for other fields of qualification. All projections would then need to be reviewed to ensure consistency with each other, for example, to ensure that, on the supply side, projections for particular disciplines can be accommodated within the total qualified manpower supply. On the demand side, adjustment may also be needed for consistency with the expected growth in national income and total labour force and to eliminate distortions where employers have projected requirements without considering associated changes in pay scales.

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[1] As in various American studies, e.g., W. L. Hansen 'Total and private rates of return to investment in schooling', Journal of Political Economy, Vol. 81, 1963, pages 128-41, and G. S. Becker 'Human capital' (Princeton 1964).

[2] As in M. Blaug, M. Peston and A. Ziderman 'The utilisation of educated manpower in industry' (London 1967) and L. Maglen and R. Layard 'How profitable is engineering education?', Higher Education Review, Spring 1970, pages 51-67.

[3] See *Education in 1969*, H.M.S.O., April 1970, Part III, paragraph 107.

[4] The difficulty arises because it is mainly the more able school leavers who are attracted to higher education. Some American studies have indicated that about two-thirds of the earnings differential is attributable to education (G. S. Becker, op. cit.; E. F. Denison 'Proportion of income differentials among education groups due to additional education' in J. Vaizey (ed.) 'The residual factor and economic growth' (Paris 1964)). A Swedish study, however, suggests that a lower figure is obtained when adjustments are made for the socio-economic background of those in different educational groups (T. Husen 'Talent, opportunity and career' (Stockholm 1969)).

1.8 In moving from manpower projections to estimates of the need for particular educational facilities, allowance must be made for the fact that the new supply emerging from the educational system is small by comparison with the total stock of qualified manpower: the latter is also affected by adult retraining, migration, changes in activity rates and mortality. Account should also be taken of changes in the composition of this stock resulting from workers' experience and movement between occupations, as well as of changes in patterns of utilisation and deployment. More study would be needed of occupations where it is difficult to establish a close correlation between the nature of the work and educational qualifications, especially in many management-type posts where the possession of qualifications has often been regarded mainly as an indication of general ability. This means investigating the potential substitutability of various levels and subjects of qualification; guidance on this may be provided both by relative earnings data and by detailed job analysis in relation to qualification content. Where different qualifications are found to be of similar value to employers, the relative costs of acquiring them will tend to determine the rate of return on the respective educational investments.

## 2. PROJECTING THE GROWTH OF HIGHER EDUCATION

### The scope of the Paper

2.1 Pending the fuller development of the rate of return approach and of techniques of manpower forecasting, the basis of projection adopted in this paper is, essentially, the extrapolation of trends in private demand. Future numbers entering the university and further education sectors of higher education have been related to the estimated increase in numbers staying on at school and reaching the academic standards hitherto required for entry. But places in colleges of education have been related to the projected requirement for teachers in primary and secondary schools. The approach adopted here has much in common with that of the Robbins Report,[1] though there are many differences in the detail of the calculation.

2.2 The projection, which is confined to England and Wales, covers all full-time undergraduate and postgraduate studies in universities, all full-time advanced courses in the further education sector and all full-time courses of initial training in colleges of education. The term 'full-time' embraces sandwich courses. Advanced courses in further education are defined as postgraduate, post-diploma and research work; courses in preparation for first and higher degrees, C.N.A.A. degrees, the Higher National Diploma or Certificate, the Diploma in Management Studies, the National Diploma in Design and the Diploma in Art and Design; courses leading to final professional examinations or college Diplomas or Associateships if above the standard of instruction required for the O.N.C. or for G.C.E. 'A' level; and other courses of study of equivalent standard. Provision for 'refresher' courses (e.g. in-service teacher training) is outside the scope of this paper and is excluded from the projection.

2.3 The present calculations start from a projection of qualified school leavers which is based on data on school leavers up to the end of the session 1966-67 and on trends in staying on in school up to January 1968: so far as leavers at ages 16 and over are concerned, the projection is a substantial upward revision of the one published in *Statistics of Education 1967, Volume 2,* which had assumed a slower long term growth in staying on. The school leavers projection adopted here was made before data became available on school leavers in the session 1967-68, and therefore will be superseded by the school leaver projection which appears in *Statistics of Education 1968, Volume 2*; the latter projection shows a rather greater number of future school leavers with 'A' level qualifications than the projection adopted in this paper. When the calculations in this paper were made, actual numbers of students in higher education were available only for years up to 1967. Some figures for 1968 and 1969 have subsequently become available and are shown for comparison where appropriate.

### The Robbins Committee's projection

2.4 The Robbins Committee examined a number of criteria which might be used to determine the future growth of higher education in quantitative terms. They recognised the importance of the manpower approach, that is, developing higher education in the light of the demand from the economy for highly qualified manpower. But, aside from the development of the teacher training sector of higher education, the Committee concluded that there was an insufficient theoretical and statistical base to apply this approach in practice. They therefore based their statistical projections on a so-called 'social demand' (better described as a 'private demand') approach. The Committee put forward the principle that all school leavers (and others) having the necessary qualifications for entry to higher education, and wishing to enter higher education, should be assured of a place.

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[1] Report of the Committee on Higher Education, H.M.S.O., Cmnd. 2154, 1963.

2.5 In the absence of relevant data (in particular of figures of applicants for entry to higher education) the Robbins Committee were not able to measure the numbers wishing to enter. Instead they took the postulate that the ratio of entry to higher education to the numbers of school leavers[1] with particular G.C.E. qualifications should remain at the level of a base period or should change in a specified way.[2] This statistical postulate will not necessarily give the same figures for entry to higher education as the fundamental Robbins principle stated at the end of the preceding paragraph.[3] In fact if the application rate from qualified school leavers increases, and the provision of places does not respond to this pressure for entry, the minimum entry qualification demanded in practice by the selectors in the higher education institutions will rise above what is nominally the minimum qualification.

2.6 This Planning Paper follows the Robbins Committee's method of projection in making assumptions about the future ratio of higher education entrants to qualified school leavers. It might be argued that the emergence, since the Robbins Report, of statistics of applicants[4] opens up the possibility of explicitly following the Robbins principle that all those qualified and wishing to enter higher education should be enabled to do so. In fact the observed number of applicants depends on a great many factors, including the number of higher education places 'on offer', and would appear to provide an uncertain base for projection purposes.

2.7 Although the broad principles of the projection in this paper follow those adopted in the Robbins Report, there are considerable differences of detail. The development in data sources since the time of the Committee's Report has made it possible to provide a somewhat more detailed and articulated analysis of the flows into higher education. Men and women have been separately identified; and those holding different levels of school leaving qualification have also been distinguished, viz. those holding 3 or more 'A' levels, 2 'A' levels only, 1 'A' level only and, where relevant, those holding only 'O' level qualifications. Both sex and level of qualification have significant effects on the pattern of flows. But grades of 'A' level pass have not been distinguished; nor has it been possible on this occasion to distinguish different subject-mixes at 'A' level. Subject orientation (arts, science, social sciences, etc.) is an important factor not only in analysing the flow patterns of school leavers but also in terms of the costs of higher education provision and in terms of employment demands, and it is hoped to incorporate some form of subject analysis in subsequent projections. Another way in which the present projection differs from that in the Robbins Report is that wherever practicable the flows into each higher education sector from a number of sources (viz. from school, from further education establishments, from employment and from overseas) have been distinguished: in this sense in particular the 'model' may be described as more fully articulated.

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[1] In the following exposition, the term 'school leavers' is used for simplicity to cover also other sources of entry to higher education, for example, 'A' level courses in further education establishments and entrants direct from employment.

[2] For this purpose the Robbins Committee took 1 or more 'A' levels as the relevant G.C.E. qualification in the context of university entry. In the context of entry to further education establishments and to higher education as a whole, two levels of qualifications were taken, viz. those holding 1 or more 'A' levels and those holding 5 or more 'O' levels but no 'A' levels. This paper does not discuss the value of G.C.E. 'A' levels as indicators of suitability for higher education, nor have possible variations over time in 'A' level standards been examined. Both questions might be appropriate subjects for further research.

[3] The two approaches only give the same result if the proportion of qualified school leavers who apply for entry equals the ratio adopted in the postulate.

[4] Particularly statistics of university applicants provided by the Universities' Central Council for Admissions.

2.8 The Robbins Report adopted an approach in which a 'private demand' projection of the kind described in paragraph 2.5 was established for higher education as a whole. Separate projections for universities and colleges of education were then made based respectively on private demand and manpower demand approaches; the further education sector was treated as a residual balancing item with a consequential low rate of growth. By contrast, in this paper separate projections of a private demand type have been established not only for universities but also for further education, in each case related to the estimated growth in school leavers (and others) holding appropriate qualifications for entry. For the teacher training sector the figures, like those in the Robbins Report, are derived from an assessment of manpower needs; they are therefore related to the projections of the need for and supply of teachers in maintained primary and secondary schools given in *Statistics of Education 1968*, *Volume 4* (Teachers).

2.9 In the period 1962 to 1967, entry to universities had been available to a decreasing proportion of boys leaving school with 2 or more 'A' levels (see Table A(i) of Appendix I). The present projection of university entry for men was based on the postulate that there would be a return by 1971 to the entry proportions of 1962, even though it was realised that, taking men and women together, this would involve the provision of 30,000 more places in universities in 1971 than the 185,000 places in England and Wales that had been envisaged for that year in the 1967 quinquennial settlement. It is now expected that there will be some 200,000 university students in England and Wales in 1971 which is in excess of the numbers envisaged in the quinquennial settlement only to about half the extent which would have been required by a reversion to the 1962 proportionate entry for boys leaving school. This difference between the numbers of university places expected to be available in the short-term, specifically in 1971, and the corresponding numbers embodied in the projection in this Planning Paper should be borne in mind in the discussion in subsequent chapters of the paper.

2.10 This paper assumes a stabilisation of the intake to colleges of education after 1969. This has two implications. First, it leads to a projected pattern of growth of teacher training which is very much less than that projected for universities and advanced further education. Secondly, many school leavers holding G.C.E. qualifications somewhat below those required for university entry at present look to the colleges of education for their higher education; this applies particularly to girls. Within the future numbers in colleges of education assumed in this paper there will be diminished opportunities for the greatly enhanced flow of school leavers with relevant qualifications. It has therefore been assumed that some of the qualified school leavers unable to find places in colleges of education would instead enter advanced further education. This element in the intake to advanced further education is additional to the intake projected on the basis of current 'demand' trends alone.

2.11 As in the Robbins Report, only a single pattern of future development is presented on the basis of specific assumptions concerning the ratio of higher education entry to qualified school leavers, average length of course, unit costs, and so on. The assumptions described in this paper were adopted as reasonable premises in the light of information available at the time. Different assumptions at any point in the calculation would have led to results differing to a greater or lesser extent from those presented here. Even if study is limited to projections which might be regarded as broadly consistent with the Robbins Report's approach and principles, a considerable range of projections with differing scales and patterns of development could be devised.[1] There are a considerable number of factors, both internal to the higher education system and external to it, which may have a significant impact on its future development. In many cases it is not practicable to assess their impact in quantitative terms. Examples of external uncertainties include the long-run effect of raising the school leaving age in 1973 and the effects of possible changes in the system of school examinations.

2.12 The remainder of this paper sets out the Department's projection, stage by stage. As regards universities and advanced further education, the projection has been made in a series of steps:

(i) projections of the numbers in school, starting from the population figures from the General Register Office and the Government Actuary's Department (outlined in Chapter 3);
(ii) projections of school leavers with qualifications appropriate for entry to higher education, and projections of the corresponding output from further education establishments (Chapter 3);
(iii) projections of entrants to higher education, based mainly on assumptions about the proportion of qualified leavers (and the corresponding output from further education) who will enter (Chapter 4 and Appendix I);
(iv) projections of places in higher education, based on assumptions about the length of course and postgraduate provision (Chapter 5 and Appendix II).

As regards the colleges of education, future student numbers are related to the projected requirements of the schools for trained teachers. The implications for the entry of school leavers and others into the colleges of education are explained in Chapters 4 and 5 and Appendix I, alongside the corresponding figures for universities and advanced further education. Chapter 6 and Appendix III examine the unit costs of higher education, and show the results of applying these to the projections of student numbers.

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[1] Estimates of the development of higher education have been made by organisations outside the Government, using different assumptions and techniques, and leading to different results: e.g. *vide* A. Crampin and P. Armitage, Higher Education Review, Spring 1970, pages 5-14.

## 3. G.C.E. ATTAINMENTS

### The projection of school population

3.1 The school population projections used for this paper[1] start from the mid-1967 estimates of the future population of England and Wales, prepared by the Government Actuary's Department in consultation with the General Register Office. Onto the figures of population in the age-groups 15 to 19 is superimposed a projection of the proportion of children who stay on at school after the statutory school leaving age. The upward trend shown between 1961 and 1968 in this proportion is assumed, in general, to continue exponentially until the early 1970's, and thereafter as a straight line.[2] On the other hand, the size of the total 18-year-old age group (both at school and outside) in England and Wales will decline from the high 1966 level, reaching a broad 'plateau' between 1970 and 1974, before beginning to grow substantially again. The net result of these two trends is that, after a 'plateau' between 1966 and 1969, the total number of 18-year-olds in all schools in England and Wales is estimated to rise significantly from 1970 onwards; so that by 1981 the number of 18-year-olds at school will be approximately twice that in 1969.

### The projection of qualified school leavers[3]

3.2 The projected numbers of school leavers with the appropriate G.C.E. qualifications for entering higher education are obtained by multiplying the estimated number of leavers of each age by the proportions expected to gain given qualifications. Amongst leavers of a given age, the proportions possessing specified levels of G.C.E. qualifications have generally remained fairly constant over the last few years, and it has therefore been assumed that these proportions will be maintained in the future, except that:

(i) the proportion of leavers at age 16 who have 5 or more 'O' level passes but no 'A' levels has been assumed to fall (in continuation of present trends); and
(ii) the proportion of leavers at age 17 who possess 'A' level passes has been assumed to rise (in continuation of present trends).

The resulting projections, which start from actual figures for 1967, are shown in Table 1 and Figure 1. Actual figures for 1968 have recently become available and are given for comparison in Table 1 below.

3.3 Table 1 shows that, over the decade from 1971 to 1981, the numbers of school leavers in England and Wales with the minimum qualifications for entry to higher education may be expected almost to double, so that by 1981 about one-quarter of the total age group will possess one or more 'A' level on leaving school. The numerical increase is larger in the second part of the period than in the first, partly because of the greater growth in the relevant total age group towards the end of the 1970's, and partly as a result of the continued rise assumed in staying-on rates. During the decade, the numbers leaving school with one or more 'A' levels are expected to increase faster than the numbers of those leaving

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[1] See *Statistics of Education 1968, Volume 1*, Table 45.

[2] In the absence of any firm basis of calculation, it has not proved possible to make an identifiable allowance for: (a) the extent to which the raising of the school leaving age to 16 in 1973 may itself encourage further voluntary staying-on at school beyond 16 in later years, though it is suggested that recent trends in the staying-on rate may reflect an anticipation of the raising of the school leaving age; or (b) the effects of any change in the rate of secondary school reorganisation.

[3] In this paper, the term 'qualified' relates to the possession of one or more G.C.E. 'A' level pass (and in certain instances 5 'O' levels but no 'A' level), which in the past has been a necessary but not sufficient condition of admission to higher education. Its use for the projections in this paper similarly does not imply any assumption that the qualification will secure admission in the future.

## TABLE 1

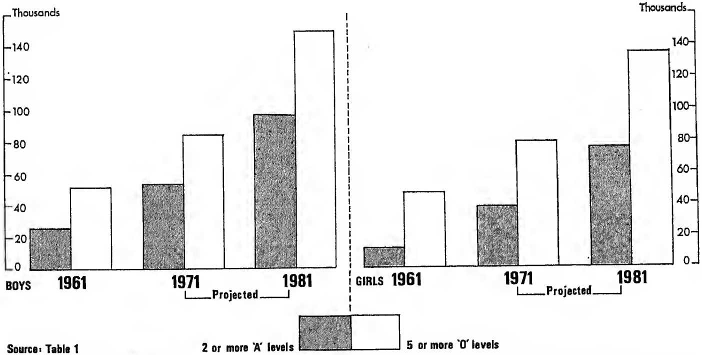
### School leavers with given G.C.E. attainments

### England and Wales

| | 5 or more 'O' levels* | | 1 or more 'A' levels | | 2 or more 'A' levels | | 3 or more 'A' levels | |
|---|---|---|---|---|---|---|---|---|
| | Number (000s) | *% of age group* | Number (000s) | *% of age group* | Number (000s) | *% of age group* | Number (000s) | *% of age group* |
| **Boys** | | | | | | | | |
| 1961 actual | 50·7 | *15·6* | 31·1 | *9·8* | 25·8 | *8·1* | 17·8 | *5·6* |
| 1966 actual | 72·4 | *18·5* | 51·6 | *12·8* | 42·5 | *10·5* | 29·2 | *7·3* |
| 1968 actual | 72·3 | *20·4* | 53·7 | *15·0* | 44·4 | *12·4* | 30·4 | *8·5* |
| 1971 projected | 84·4 | *24·8* | 63·7 | *18·6* | 53·1 | *15·5* | 36·3 | *10·6* |
| 1976 projected | 111·3 | *30·3* | 85·0 | *23·1* | 71·0 | *19·3* | 48·9 | *13·3* |
| 1981 projected | 147·7 | *35·0* | 115·7 | *27·5* | 96·8 | *23·0* | 66·9 | *15·9* |
| **Girls** | | | | | | | | |
| 1961 actual | 47·2 | *14·9* | 20·7 | *6·7* | 15·0 | *4·9* | 8·7 | *2·8* |
| 1966 actual | 64·3 | *17·5* | 35·6 | *9·3* | 26·8 | *7·0* | 15·0 | *3·9* |
| 1968 actual | 66·8 | *19·9* | 39·6 | *11·6* | 30·0 | *8·8* | 17·0 | *5·0* |
| 1971 projected | 78·6 | *24·2* | 50·0 | *15·3* | 38·2 | *11·7* | 23·5 | *7·2* |
| 1976 projected | 103·4 | *29·5* | 69·6 | *19·9* | 53·6 | *15·3* | 33·9 | *9·7* |
| 1981 projected | 136·7 | *33·9* | 96·8 | *24·1* | 75·1 | *18·7* | 48·1 | *12·0* |

* Including 'O' level passes obtained on 'A' level papers and Grade 1 results in C.S.E. in 1966 and later.

**Figure 1.** GROWTH IN SCHOOL LEAVERS WITH GIVEN GCE ATTAINMENTS ENGLAND AND WALES



Source: Table 1

with 5 'O' levels but no 'A' levels. The figures substantially exceed those projected by Robbins, especially for girls and for leavers with 'A' levels. Table 2 compares, for the years 1968 and 1976, the projections of qualified school leavers published in the Robbins Report and in this present Paper.

TABLE 2

**School leavers: comparisons of projections for 1968 and 1976 made at two dates**

**England and Wales**

Thousands

| | 5 or more 'O' levels | | 1 or more 'A' levels | | 2 or more 'A' levels | | 3 or more 'A' levels | |
|---|---|---|---|---|---|---|---|---|
| | 1968 | 1976 | 1968 | 1976 | 1968 | 1976 | 1968 | 1976 |
| **Boys** | | | | | | | | |
| Robbins (1963) | 69·1 | 94·4 | 45·0 | 61·3 | 37·3 | 50·9 | 25·8 | 35·2 |
| Present projection | 72·3* | 111·3 | 53·7* | 85·0 | 44·4* | 71·0 | 30·4* | 48·9 |
| **Girls** | | | | | | | | |
| Robbins (1963) | 59·8 | 79·8 | 28·1 | 37·4 | 20·4 | 27·3 | 11·9 | 15·8 |
| Present projection | 66·8* | 103·4 | 39·6* | 69·6 | 30·0* | 53·6 | 17·0* | 33·9 |

* actual figure.

### Flow of people with 'A' level qualifications from further education

3.4 The supply of people with 'A' level qualifications from further education has grown, and is expected to grow, more rapidly than was previously estimated, particularly for girls, as is illustrated by Table 3, which compares the present projection, based on actual figures for 1967, with the Robbins estimates. The recent expansion of this source has been so great that the projection must inevitably contain a wide margin of error.

TABLE 3

**Flow of people with G.C.E. 'A' level qualifications from further education**

**England and Wales**

Thousands

| | Boys | | | Girls | | |
|---|---|---|---|---|---|---|
| | 1 or more 'A' levels | 2 or more 'A' levels | 3 or more 'A' levels | 1 or more 'A' levels | 2 or more 'A' levels | 3 or more 'A' levels |
| 1961 actual | 3·2 | 1·8 | 1·0 | 1·8 | 0·7 | 0·3 |
| 1966 actual | 8·0 | 4·3 | 2·3 | 5·6 | 1·9 | 0·8 |
| 1968 (actual) | 10·7 | 5·8 | 2·9 | 8·2 | 2·8 | 1·2 |
| 1968 (Robbins) | 5·2 | 3·0 | 1·7 | 2·9 | 1·2 | 0·5 |
| 1971 (projected) | 11·4 | 6·2 | 3·5 | 8·6 | 3·0 | 1·5 |
| 1976 (projected) | 15·5 | 8·5 | 4·8 | 13·8 | 4·8 | 2·3 |
| 1981 (projected) | 26·0 | 13·2 | 8·0 | 26·1 | 8·9 | 4·4 |
| 1981 (Robbins) | 9·0 | 5·1 | 2·8 | 5·1 | 2·0 | 0·8 |

## 4. ENTRANTS TO FULL-TIME HIGHER EDUCATION[1]

4.1 Most entrants to full-time higher education in England and Wales come direct from school. There are differences in the proportions of these school leavers who enter higher education, both between boys and girls and between those holding different levels of G.C.E. qualification. The intake to universities and advanced further education has been projected up to 1981, on the basis of a detailed analysis of the destinations of school leavers since 1962, accepting the Robbins postulate that the proportions of qualified school leavers who enter higher education courses should not fall below the levels reached in the early 1960's[2]. The detailed assumptions about the future entry to the various sectors of higher education have been drawn up on consistent and interdependent postulates, and are set out more fully in Appendix I.

### TABLE 4

**Distribution by destination of school leavers with 2 or more 'A' levels**

**England and Wales**

| | Universities* | Colleges of education* | Advanced further education* | Remainder† | Total |
|---|---|---|---|---|---|
| **Boys** | | | | | |
| Number (000s) | | | | | |
| 1962 actual | 18·0 | 1·5 | 2·9 | 7·4 | 29·9 |
| 1967 actual | 23·8 | 2·3 | 6·3 | 11·3 | 43·7 |
| 1971 projected | 31·9 | 2·6 | 9·2 | 9·3 | 53·1 |
| 1976 projected | 42·9 | 3·4 | 12·7 | 12·0 | 71·0 |
| 1981 projected | 58·6 | 4·7 | 17·3 | 16·3 | 96·8 |
| *Percentage* | | | | | |
| 1962 actual | *60·3* | *5·1* | *9·6* | *25·0* | *100* |
| 1967 actual | *54·5* | *5·3* | *14·4* | *25·7* | *100* |
| 1971 projected | *60·1* | *4·9* | *17·4* | *17·6* | *100* |
| 1976 projected | *60·4* | *4·8* | *17·9* | *16·8* | *100* |
| 1981 projected | *60·5* | *4·8* | *17·9* | *16·8* | *100* |
| **Girls** | | | | | |
| Number (000s) | | | | | |
| 1962 actual | 7·2 | 5·3 | 1·1 | 4·3 | 17·8 |
| 1967 actual | 11·1 | 7·2 | 2·2 | 7·5 | 27·9 |
| 1971 projected | 16·3 | 9·7 | 3·4 | 8·8 | 38·2 |
| 1976 projected | 23·3 | 13·4 | 4·9 | 12·1 | 53·6 |
| 1981 projected | 32·9 | 15·2 | 8·2 | 18·9 | 75·1 |
| *Percentage* | | | | | |
| 1962 actual | *40·5* | *29·3* | *6·2* | *24·0* | *100* |
| 1967 actual | *39·8* | *25·7* | *7·8* | *26·8* | *100* |
| 1971 projected | *42·7* | *25·4* | *8·8* | *23·1* | *100* |
| 1976 projected | *43·5* | *24·9* | *9·1* | *22·5* | *100* |
| 1981 projected | *43·8* | *20·2* | *10·9* | *25·1* | *100* |

* Including school-leavers entering higher education via 'temporary employment'.
† Residual item including those entering non-advanced further education or employment or professional training outside the specified sectors of higher education.

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[1] The term 'entrants' in this paper refers to the number of students who enter full-time and sandwich courses in higher education, in a particular year, for the first time.

[2] See paragraph 2.9 on the short-term prospects for university entry.

4.2 For boys and girls with 2 or more 'A' levels, these assumptions imply increasing opportunity to enter higher education (see Table 4) until the early 1970's. Thereafter, opportunities for boys are postulated to remain constant (that is, in terms of the *proportions* of those qualified who would enter, though not in terms of *absolute numbers*); while the opportunities for girls would decrease in the late 1970's in terms of proportions (but would increase in terms of numbers), because of the reduced opportunities to enter colleges of education (as described in paragraph 4.8). As a corollary, the numbers of boys with 2 or more 'A' levels available for employment or for professional training outside the higher education system would decline slightly in the early 1970's, and then increase; while for girls there would be a continuous increase.

4.3 The opportunity for entry to higher education for school leavers with less than 2 'A' levels is compounded of two opposing trends. On one hand, for the purpose of this paper, the total entry to colleges of education is assumed to be numerically constant, within which numbers of entrants direct from school with 2 or more 'A' levels increase and numbers of entrants from school with lower qualifications generally decrease. On the other hand, the recent rapid increases in the proportion of school-leavers with one 'A' level who enter advanced further education are assumed to continue into the early 1970's, thereafter being augmented to provide an alternative for some of those who were unable to gain admission to colleges of education. The net result of these assumptions is that the proportion of boys with one 'A' level who would enter higher education would be about the same in 1981 as in 1967 (38 per cent); but the corresponding proportion of girls would decrease markedly from 58 per cent in 1967 to 25 per cent in 1981. Moreover, on these premises, fewer school leavers with 5 or more 'O' levels but no 'A' levels would be admitted to higher education in 1981 than in 1967.

4.4 The following paragraphs discuss total student entry into each sector. As far as possible, the intake in the past has been analysed in terms of the sector from which the student originates, viz.: entrants from school; entrants from full-time and part-time courses in further education establishments (e.g. G.C.E. courses); and entrants from overseas. The category labelled 'from employment' has been obtained by subtracting other identified entries from the known total entry. Assumptions must be made about all these categories of entrants to higher education, in addition to the assumptions described in Appendix I, and summarised above, about the intake of qualified school-leavers.

## Initial entry to universities

4.5 It has been postulated that the proportion of school leavers with 3 or more 'A' levels who proceed to universities (which has recently been slightly lower than the proportion in the early 1960's) will rise by 1971 to 75 per cent in the case of boys (the same proportion as in 1963 and 1965), and to 60 per cent in the case of girls (the proportion in 1962, 1964 and 1965), and will thereafter remain constant. The proportion of school leavers with 2 'A' levels who enter university has been postulated to reach and stay at 28 per cent for boys (as in 1962 but slightly lower than in 1965), and 15 per cent for girls (marginally above the 1964 and 1966 levels), from 1970 onwards. The numbers of entrants from overseas have been assumed to remain constant, in the absence of any clear trends. Statistics of awards have enabled the flows of people from further education into universities in the past to be identified. Not all of these entrants held 'A' level qualifications (e.g. some held O.N.C. qualifications) but for simplicity their total numbers have been expressed as a proportion of the total output from further education of people with 2 or more 'A' level passes. It has been postulated that this proportion, which includes an allowance for university entrants from further education who possess non-G.C.E. qualifications, will be maintained at the 1967 level – that is, 55 per cent for men and 35 per cent for women. Finally, the residual entry to universities (mainly from employment) was significantly higher in 1966 and 1967 than in previous years, and it is not yet certain to what extent this change reflects a genuinely rising trend, or a change in the basis of the statistics. Accordingly, the numbers of such entrants have been projected arbitrarily to rise to a plateau in and after 1972.

4.6 On these premises, the total intake to universities would increase by nearly 32 per cent between 1967 and 1971, and by over 34 per cent between 1971 and 1976 and again between 1976 and 1981.

**TABLE 5**

**Initial entrants to universities**

**England and Wales**

Thousands

| | From school* | From full-time and part-time further education | From overseas | From employment† | Total |
|---|---|---|---|---|---|
| **Men** | | | | | |
| 1962 actual | 18·2 | 1·1 | 2·0 | 2·1 | 23·4 |
| 1967 actual | 24·2 | 3·2 | 1·7 | 4·3 | 33·3 |
| 1971 projected | 31·9 | 3·6 | 2·0 | 4·9 | 42·5‡ |
| 1976 projected | 42·9 | 5·6 | 2·0 | 5·0 | 55·5 |
| 1981 projected | 58·6 | 8·3 | 2·0 | 5·0 | 73·8 |
| **Women** | | | | | |
| 1962 actual | 6·9 | 0·3 | 0·4 | 0·6 | 8·3 |
| 1967 actual | 11·0 | 0·9 | 0·5 | 0·9 | 13·2 |
| 1971 projected | 16·3 | 1·2 | 0·4 | 1·0 | 18·9‡ |
| 1976 projected | 23·3 | 2·1 | 0·4 | 1·0 | 26·8 |
| 1981 projected | 32·9 | 3·4 | 0·4 | 1·0 | 37·7 |

* Including those entering via 'temporary employment'.
† Residual item.
‡ On present evidence the intake in 1971 is unlikely to exceed 55,000 (men and women combined).

## Initial entry to colleges of education

4.7 The development of the colleges of education is assumed for the purposes of this paper to be related to estimates of the requirements of the schools for teachers. The flow into the profession from the colleges is one element in the total supply of teachers: other elements include 'wastage', re-entry to the profession, and the supply of graduate teachers from the universities.

4.8 The annual entry to initial non-graduate courses in colleges of education is assumed to be maintained at 39,000 from 1969. It has been assumed that the numbers entering from further education and from employment, including mature students (e.g. married women), will gradually fall back to the 1966 level and that the numbers of entrants from overseas will remain at a minimal level. The remainder of the intake consists of school leavers, but their numbers will not grow as rapidly as the growth in the flow of school leavers holding relevant G.C.E. qualifications. In this situation it has been assumed that in general the better qualified applicants will be admitted, but that the colleges will still admit a small number of school leavers with lower levels of qualification. On these assumptions, there would be a substantial and continuing reduction in the proportion of leavers with one 'A' level or less who embark on teacher training, both for boys and girls, and a progressive curtailment from 1978 onwards in the corresponding proportion of girls with 2 'A' levels.

### TABLE 6

**Initial entrants to colleges of education**

**England and Wales**

Thousands

| | From school* | From overseas | From further education and employment | Total |
|---|---|---|---|---|
| **Men** | | | | |
| 1962 actual | 2·7 | 0·1 | 2·3 | 5·1 |
| 1967 actual | 4·8 | — | 4·8 | 9·7 |
| 1971 projected | 5·5 | 0·1 | 5·4 | 11·0 |
| 1976 projected | 6·5 | 0·1 | 4·9 | 11·5 |
| 1981 projected | 7·1 | 0·1 | 4·5 | 11·7 |
| **Women** | | | | |
| 1962 actual | 10·1 | 0·1 | 2·3 | 12·4 |
| 1967 actual | 15·6 | 0·1 | 10·0 | 25·7 |
| 1971 projected | 17·0 | 0·1 | 10·9 | 28·0 |
| 1976 projected | 18·1 | 0·1 | 9·3 | 27·5 |
| 1981 projected | 19·2 | 0·1 | 8·0 | 27·3 |

* Including those entering via 'temporary employment'.

4.9 Provision for one-year training courses for university graduates is at present made largely in university departments of education and to a relatively small extent in colleges of education. This provision is allowed for in the projections of places in the respective sectors but is not reflected in initial entry figures.

### Initial entry to full-time and sandwich advanced courses in further education

4.10 The proportions of school leavers with various levels of qualification who are admitted to advanced further education have been postulated to rise, in line with past trends, until 1970 for boys and 1972 for girls, thereafter remaining constant. The analysis of the latest data suggests that admissions to advanced further education from non-advanced courses in further education and from employment are now growing faster than admissions direct from school. A sizeable proportion of those entering from non-advanced further education and from employment possesses O.N.C. or other technical qualifications; so that the output of people with 'A' level qualifications from the further education system cannot be taken as an appropriate indicator. It has been assumed that the future numbers admitted from non-advanced further education and from employment will together equal the numbers entering direct from school. Numbers entering advanced further education from overseas have been treated as constant in the case of women (200 annually), while for men the figure is projected to rise to the 1966 level of 2,500 by 1972 and to remain at that level thereafter.

4.11 The projection described in the preceding paragraph is based essentially on past trends. In addition an allowance has been made for a diversion into advanced further education as a result of the assumed diminution in opportunities for qualified school leavers to enter colleges of education during the 1970's. For the purpose of this paper, it has been assumed that a proportion of those school leavers with 'A' level qualifications who might on present trends have expected to gain admission to colleges of education but who would be unable to obtain entry to them in the late 1970's will instead enter advanced further education; this proportion has arbitrarily been taken as 50 per cent in the case of boys with 'A' level qualifications, 40 per cent of the girls with 2 'A' levels, and 20 per cent of the girls with one 'A' level.

TABLE 7

**Initial entrants to full-time and sandwich advanced further education**

**England and Wales**

Thousands

| | From school* | From overseas | From further education and employment | Total |
|---|---|---|---|---|
| **Men** | | | | |
| 1962 actual | 3·7 | 1·6 | 3·3 | 8·5 |
| 1967 actual | 8·5 | 2·1 | 8·7 | 19·3 |
| 1971 projected | 11·9 | 2·4 | 11·9 | 26·2 |
| 1976 projected | 16·2 | 2·5 | 16·2 | 35·0 |
| 1981 projected | 22·7 | 2·5 | 22·1 | 47·3 |
| **Women** | | | | |
| 1962 actual | 1·4 | 0·2 | 0·9 | 2·5 |
| 1967 actual | 2·9 | 0·2 | 3·0 | 6·1 |
| 1971 projected | 4·6 | 0·2 | 4·3 | 9·1 |
| 1976 projected | 7·4 | 0·2 | 6·1 | 13·7 |
| 1981 projected | 11·6 | 0·2 | 8·5 | 20·3 |

* Including those entering via 'temporary employment'.

## Total entry to full-time higher education

4.12 Adding together the entry figures for each sector of higher education, on the assumptions described above, the total intake to full-time higher education in England and Wales would increase from 107,400 in 1967 to 218,000 in 1981. The changing mix in origins of entrants to higher education is shown in Figure 2. The average growth rate in total entry was 12 per cent per annum during the period from 1962 to 1967; the corresponding annual growth rates indicated by the present projections are 6·0 per cent from 1967 to 1971, 4·6 per cent from 1971 to 1976, and 5·1 per cent from 1976 to 1981. The rate of growth in total entry would thus not be uniform throughout the period, but would accelerate towards the end of the decade; but it would be lower (in percentage terms) than in the early 1960's. These features are summarised in Table 8 and Figure 3.

4.13 The assumed stabilisation of the intake to colleges of education after 1969 would lead to a reduction in this sector's proportion of the total entry to higher education, from 33 per cent in 1967 to 18 per cent in 1981. The university share would grow from 43 per cent of all entrants in 1967 to 51 per cent in 1981, i.e. to a figure approaching the 1962 proportion (53 per cent). Advanced further education would admit an increasing proportion, from 24 per cent of total entry in 1967 to 31 per cent in 1981, so that by 1976 many more students would enter this sector than colleges of education. Because of the particular significance of

### TABLE 8

**Total entrants to full-time higher education**

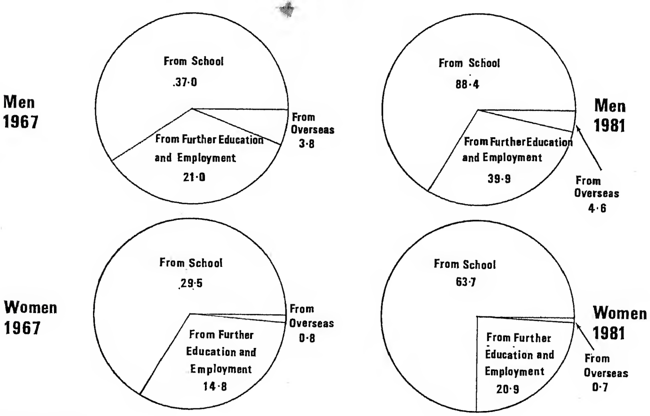
**England and Wales**

| | Men | Women | Univer-sities | Colleges of education | Advanced further education | Total | *Average annual percentage increase over the preceding period* |
|---|---|---|---|---|---|---|---|
| 1962 actual — number (000s) | 37·1 | 23·2 | 31·7 | 17·6 | 11·0 | 60·3 | |
| *per cent* | *61·5* | *38·5* | *52·6* | *29·1* | *18·3* | *100* | |
| 1967 actual — number (000s) | 62·4 | 45·0 | 46·6 | 35·4 | 25·4 | 107·4 | *12·2* |
| *per cent* | *58·1* | *41·9* | *43·3* | *33·0* | *23·7* | *100* | |
| 1971 projected — number (000s) | 79·7 | 55·9 | 61·4 | 39·0 | 35·2 | 135·6 | *6·0* |
| *per cent* | *58·7* | *41·3* | *45·3* | *28·7* | *26·0* | *100* | |
| 1976 projected — number (000s) | 102·0 | 67·9 | 82·3 | 39·0 | 48·6 | 169·9 | *4·6* |
| *per cent* | *60·0* | *40·0* | *48·4* | *22·9* | *28·7* | *100* | |
| 1981 projected — number (000s) | 132·8 | 85·2 | 111·5 | 39·0 | 67·5 | 218·0 | *5·1* |
| *per cent* | *60·9* | *39·1* | *51·1* | *17·9* | *31·0* | *100* | |

colleges of education in the higher education system for women (57 per cent of all women entrants to higher education in 1967 went into this sector, compared with 16 per cent of men), the stabilisation of the entry to colleges of education throughout the 1970's would, on

**Figure 2** SOURCE OF INITIAL ENTRANTS TO HIGHER EDUCATION 1967 AND 1981 (THOUSANDS)

ENGLAND AND WALES

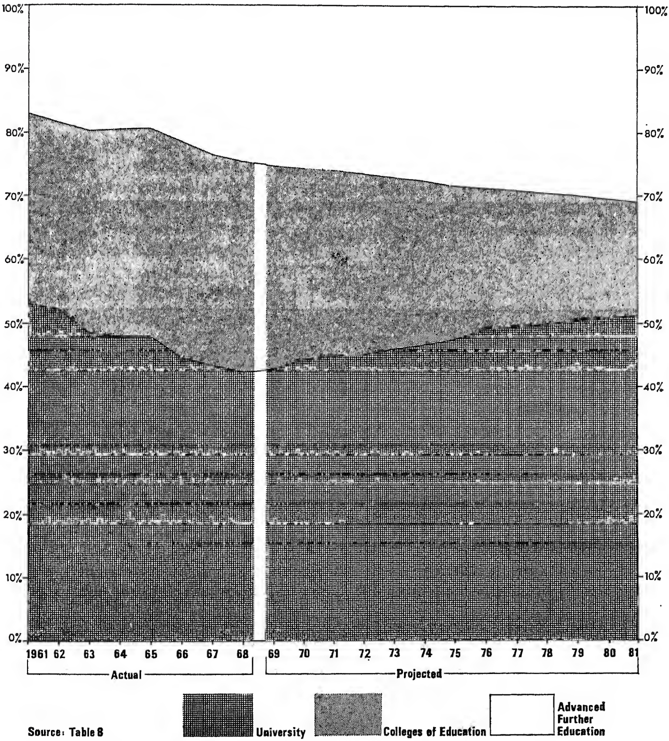


Source: Tables 5, 6 and 7

N.B. 'Men 1967—From School' for 37·0 read 37·5 these projections, result in a reduction in the proportion of women in the total intake to higher education, from 42 per cent in 1967 to 39 per cent in 1981. This reduction would, however, have been greater, if it had not been postulated that there would be a rapid expansion in the 1970's in the admission into advanced further education of girls leaving school with 'A' levels, in order to offset in some degree the diminished opportunities in colleges of education.

**Figure 3** PERCENTAGE DISTRIBUTION OF ENTRY TO FULL-TIME HIGHER EDUCATION BY SECTOR 1961 to 1981

ENGLAND AND WALES



Source: Table 8

## 5. PLACES IN FULL-TIME HIGHER EDUCATION

5.1 In this paper, number of places means, so far as the past is concerned, the numbers of students on full-time and sandwich courses; and so far as the future is concerned, the number of places that would be required in a particular year to accommodate the number of new entrants to such courses in that and preceding years, on appropriate assumptions about the length of time they spend in higher education. The average length of time spent in higher education per initial entrant depends on a number of factors: the nominal length of the (undergraduate) course; any extension of the period of study due, for example, to repetition of a year; the extent to which students leave courses prematurely; and the proportion of students going on to postgraduate studies and the length of such studies. This paper employs the device, adopted in the Robbins Report calculations, of combining all these possible sources of variation in a single figure, called the 'effective length of course'; this approach can only be regarded as providing an approximate model of the real situation.[1]

5.2 Table 9 sets out the effective course length for each sector, as calculated from actual total student numbers in 1963 and 1967 and as postulated for subsequent years on the assumptions described in the following paragraphs.

TABLE 9

**Effective length of course**

**England and Wales**

Years

| | | Universities | | Colleges of education | Advanced full-time and sandwich further education |
|---|---|---|---|---|---|
| | | Undergraduate stage only | All stages | | |
| Related to total student numbers in the autumn of | | | | | |
| Men | 1963 | 3·06 | 3·90 | 3·17 | 2·99 |
| | 1967 | 3·11 | 4·05 | 3·08 | 3·12 |
| | 1972 | 3·11 | 3·94 | 3·14 | 3·25 |
| | 1978 and later | 3·11 | 3·94 | 3·45 | 3·25 |
| Women | 1963 | 2·99 | 3·57 | 2·92 | 2·65 |
| | 1967 | 3·01 | 3·70 | 2·95 | 3·03 |
| | 1972 | 3·02 | 3·64 | 3·00 | 3·20 |
| | 1978 and later | 3·02 | 3·64 | 3·25 | 3·20 |

### Length of university courses

5.3 As Table 9 shows, the effective length of undergraduate courses in universities has been taken to remain virtually constant from 1967 onwards. The overall effective length of course has, however, been assumed to fall between 1967 and 1972, from 4·05 to 3·94 years for men and from 3·70 to 3·64 years for women. The extent of the change assumed is essentially arbitrary. Given that the average length of undergraduate course stays constant, such a reduction in the overall effective length of course implies a significant reduction in the average length of postgraduate courses and/or in the proportion of those obtaining a first degree who are admitted to postgraduate studies. This would be in line with the guidance given to universities by the University Grants Committee, following the 1967 quinquennial settlement, although it remains uncertain, on latest evidence, whether universities will in practice achieve any significant changes of this character. After the end of the present quinquennium, that is in and after 1972, no further change in the effective length of course has been assumed. On the assumptions set out here, the ratio of postgraduate places to all university places would decline from just under 19 per cent in 1967 to just under 18 per cent in 1981[1].

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[1] To indicate how this factor has been derived from past data, and how it may be applied to future entry projections in order to calculate total places, the following example may be taken. Suppose that the entries to a sector in 1964, 1965, 1966 and 1967 had been 140, 160, 190 and 225 respectively, and that the total number of students on course in 1967 was 610. The latter figure may be thought of as comprising not only the whole of the entries in 1965, 1966 and 1967 (which total 575) but also some of the 1964 intake, viz. 610 *less* 575, which equals 35. The latter 35 represents 0·25 of the total 1964 entry of 140. The 'effective length of course' is thus calculated as 3 *plus* 0·25, or 3·25 years: it broadly reflects the average duration of courses in the sector, as reduced by wastage and as extended by repeating years of course.

### Length of college of education courses

5.4 In colleges of education, the projected increase in the effective length of course up to 1978 allows for an extension of the present provision of 4-year B.Ed. degree courses.

### Length of advanced further education courses

5.5 The recently observed increases in effective length of course may have arisen from the changing structure of courses; from a changing balance of numbers on courses of different lengths; from increases in postgraduate provision; or from reductions in the proportion of students who fail to complete their studies. But no detailed evidence is available. The upward trends in the effective length of course have been assumed to continue until 1972, after which a constant length has been adopted.

### The projected number of places

5.6 These assumptions about the future effective length of courses in each sector have been applied to the corresponding figures of initial entry, in order to derive the number of places projected for each sector. The results are discussed, and compared with the projections in the Robbins Report, in the following paragraphs.

### Places in universities

5.7 In 1967, the actual number of students in universities in England and Wales (167,600) was 4,500 more than the figure projected in the Robbins Report (163,100); see Table 10 below. The number of places in universities in 1971 in this projection (215,600) would be 48,000 more than the corresponding Robbins figure (167,800); 30,000 above the figure envisaged for that year in the 1967 quinquennial settlement (185,000); and some 15,000 above the number of students which, on the basis of the latest information available when this paper went to press, is now expected in 1971 (200,000). The projected places for 1976 at 286,900 would exceed the Robbins projection by 80,000. The provision of additional places between 1976 and 1981 would be some 110,000 on the present projection, as it would be on the Robbins projection; it would represent a smaller proportionate increase on this projection than on the Robbins projection.

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[1] Postgraduate students from overseas who have not pursued undergraduate courses in this country (representing in 1967 about a fifth of all postgraduate students) should properly be treated separately, rather than, as here, subsumed within the calculations of effective length of course.

TABLE 10

Places in universities

England and Wales

Thousands

| | Undergraduates | | | Postgraduates | | | Under-graduate and post-graduate | *Average annual percentage increase over preceding period* | Robbins projection |
|---|---|---|---|---|---|---|---|---|---|
| | Men | Women | Total | Men | Women | Total | | | |
| 1961* actual | 64·1 | 20·5 | 84·6 | 14·5 | 3·4 | 17·9 | 102·5 | · | 102·6 |
| 1967 actual | 97·9 | 37·9 | 135·8 | 25·0 | 6·8 | 31·8 | 167·6 | *8·5* | 163·1 |
| 1971 projected | 123·6 | 53·1 | 176·7 | 29·4 | 9·5 | 38·9 | 215·6 | *6·5* | 167·8 |
| 1976 projected | 161·5 | 75·1 | 236·6 | 37·4 | 12·9 | 50·3 | 286·9 | *5·9* | 206·9 |
| 1981 projected | 217·0 | 106·7 | 323·7 | 51·7 | 19·0 | 70·7 | 394·4 | *6·6* | 317·1 |

* Including Colleges of Advanced Technology.

**Places in colleges of education**[1]

5.8 Places in colleges of education have grown during the past decade at a much more rapid rate than the Robbins Committee envisaged (see Table 11 below). Although this paper postulates a constant initial intake to colleges of education from 1969 onwards, there would be some continuing increase in numbers in the colleges after 1971 as a result of an assumed increase in the provision of 4-year B.Ed. courses and an increase in the numbers undergoing a postgraduate training year.[2] But the growth in numbers of places would be relatively small in the period 1971 to 1976 in comparison with the continuing growth envisaged in the Robbins projection.

TABLE 11

Places in colleges of education

England and Wales

Thousands

| | Men | Women | Total | *Average annual percentage increase over preceding period* | Robbins projection |
|---|---|---|---|---|---|
| 1961 actual | 12·0 | 24·6 | 36·6 | · | 36·5 |
| 1967 actual | 28·0 | 69·1 | 97·1 | *17·7* | 75·2 |
| 1971 projected | 33·8 | 84·2 | 118·0 | *5·0* | 93·4 |
| 1976 projected | 37·5 | 86·7 | 124·2 | *1·0* | 130·8 |
| 1981 projected | 40·4 | 89·2 | 129·6 | *0·9* | 131·4 |

---

[1] The figures for places in colleges of education relate to all courses except refresher courses. Colleges of education (technical) and departments of education in colleges of further education are included. Courses in university departments of education are included under universities and studies in art teacher training are included in advanced further education.

[2] The figures take account of the Government's decision that students who graduate in and after 1970 must undergo a teacher training course before entering a primary school, and that those graduating in and after 1974 must undertake teacher training before entering a secondary school. But it is assumed, for the purpose of this paper, that postgraduate teacher training courses will continue to be provided, as at present, mainly at university departments of education.

### Places in advanced further education

5.9 By 1967, numbers of students in full-time and sandwich advanced courses in further education were already one-third higher than the Robbins figure for 1976. The rate of increase achieved between 1961 and 1967 approached 20 per cent a year. On the premises already explained, the average annual rate of growth, as shown in Table 12 below, would fall to about 12 per cent between 1967 and 1971, and to around 7 per cent between 1971 and 1981, despite the postulated provision of places in advanced further education for students, particularly women, who would be 'diverted' from colleges of education.

TABLE 12

**Places in full-time and sandwich courses in advanced further education**

**England and Wales**

Thousands

| | Men | Women | Total | *Average annual percentage increase over preceding period* | Robbins projection |
|---|---|---|---|---|---|
| 1961* actual | 19·4 | 4·4 | 23·8 | · | 23·8 |
| 1967 actual | 51·6 | 14·4 | 66·0 | *18·5* | 42·5 |
| 1971 projected | 77·6 | 25·6 | 103·2 | *11·8* | 43·7 |
| 1976 projected | 106·2 | 40·1 | 146·3 | *7·2* | 49·8 |
| 1981 projected | 143·9 | 59·2 | 203·1 | *6·8* | 61·5 |

* Excluding Colleges of Advanced Technology.

### Total places in full-time higher education

5.10 Taking the various assumptions on entry to, and effective length of course in, each of the three sectors of higher education, and combining the results, leads to a total projection (set out in Table 13 and Figure 5) of 727,100 places in higher education in England and Wales in 1981, compared with 330,700 in 1967 and 436,800 in 1971. The rate of growth of total places in higher education (illustrated in Figure 4, which is on a logarithmic scale) would slow down in the first half of the 1970's, but would show some increase in the last half of the decade. Throughout the period, the total number of places would very substantially exceed the Robbins projection. A part, but only a relatively small part, of the projected growth of higher education provision during the 1970's is attributable to a growth in the size of the total 18-year-old age group in England and Wales; the age-group is expected to increase by about a fifth during the decade. Much the larger part of the expansion reflects a continued increase in the proportions of the relevant age group who have been projected to stay on at school and to gain the required entry qualifications, and thereafter to proceed to higher education.

5.11 The proportionate shares of universities and advanced further education within the total number of places provided would increase between 1967 and 1981, on the assumptions used here, with a corresponding decline in the share taken by the colleges of education. By contrast, whilst the Robbins projection also envisaged a small increase in the university share over the same period, it envisaged little change in the proportionate share of colleges of education and a fall in the share taken by advanced further education.

### TABLE 13

**Total places in full-time higher education**

**England and Wales**

| | Men | Women | Universities | Colleges of education | Advanced further education | Total | *Average annual percentage increase over preceding period* | Robbins projection |
|---|---|---|---|---|---|---|---|---|
| 1961 actual — | | | | | | | | |
| number (000s) | 110·0 | 52·9 | 102·5 | 36·6 | 23·8 | 162·9 | · | 162·9 |
| *per cent* | *67·5* | *32·5* | *62·9* | *22·5* | *14·6* | *100* | | |
| 1967 actual — | | | | | | | | |
| number (000s) | 202·5 | 128·2 | 167·6 | 97·1 | 66·0 | 330·7 | *12·5* | 280·8 |
| *per cent* | *61·2* | *38·8* | *50·7* | *29·4* | *19·9* | *100* | | |
| 1971 projected — | | | | | | | | |
| number (000s) | 264·4 | 172·4 | 215·6 | 118·0 | 103·2 | 436·8 | *7·2* | 304·9 |
| *per cent* | *60·5* | *39·5* | *49·4* | *27·0* | *23·6* | *100* | | |
| 1976 projected — | | | | | | | | |
| number (000s) | 342·5 | 214·9 | 286·9 | 124·2 | 146·3 | 557·4 | *5·0* | 387·5 |
| *per cent* | *61·5* | *38·5* | *51·5* | *22·3* | *26·2* | *100* | | |
| 1981 projected — | | | | | | | | |
| number (000s) | 453·0 | 274·1 | 394·4 | 129·6 | 203·1 | 727·1 | *5·5* | 510·0 |
| *per cent* | *62·3* | *37·7* | *54·2* | *17·8* | *28·0* | *100* | | |

**Figure 4**

# NUMBER OF PLACES IN FULL-TIME HIGHER EDUCATION IN ENGLAND & WALES

## 1961 to 1981

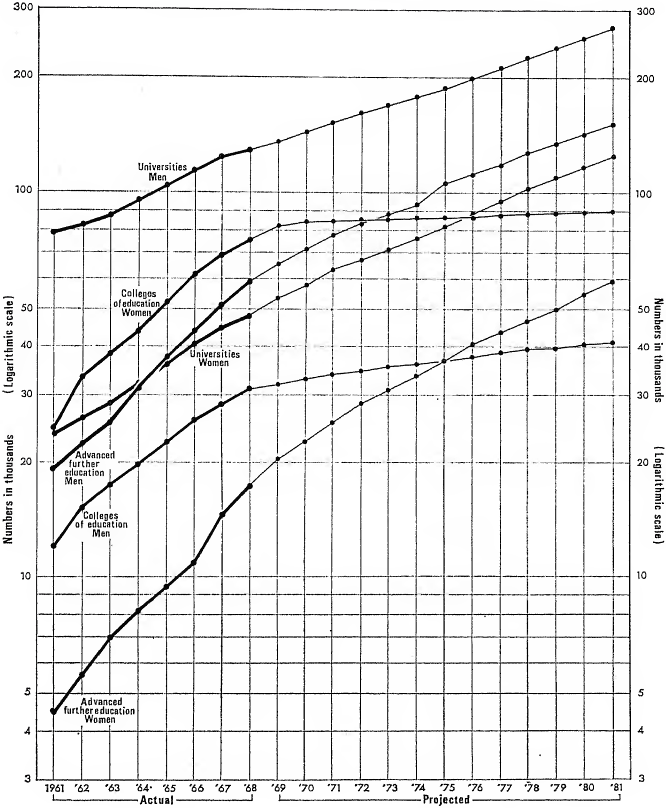
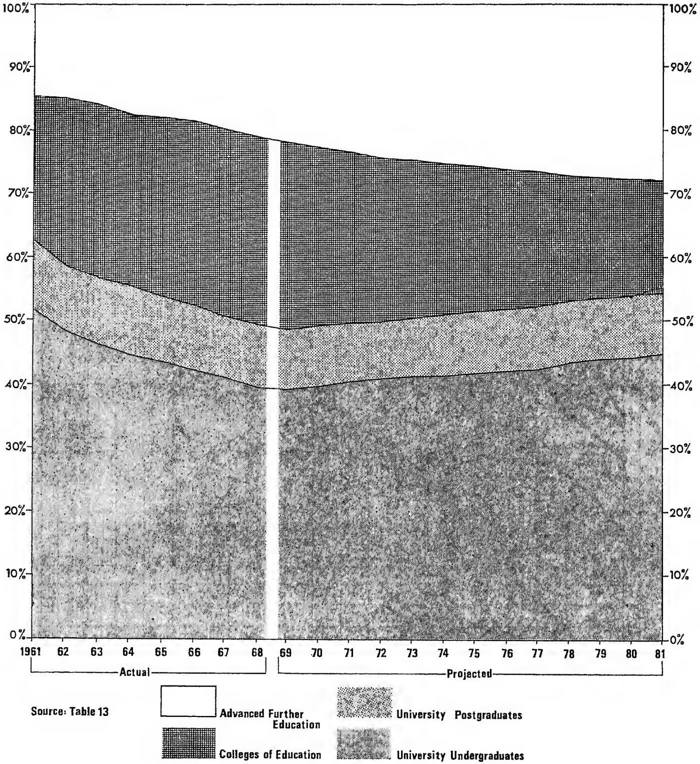


**Figure 5**

## PERCENTAGE DISTRIBUTION OF PLACES IN FULL-TIME HIGHER EDUCATION (1961-81)

### ENGLAND AND WALES



Source: Table 13

# 6. THE COST OF HIGHER EDUCATION

6.1 The preceding chapters of this paper have examined projections, based on stated premises, of numbers of students in full-time higher education up to 1981. This chapter briefly considers the available information on the present costs of various elements of higher education, before turning to estimates of the expenditure which might be incurred during the coming decade if the projections of places in higher education were to be realised in practice. Appendix III analyses the unit costs in greater detail.

6.2 To give perspective to these figures it should be remembered that information and methods are much more sketchy in respect of costs than in respect of numbers. Both the form of the costing and the magnitude of the costs assumed are likely to need wider and more frequent revisions than the corresponding projection of student numbers.

6.3 The 'cost' of higher education involves two different concepts[1]: the costs to the public sector (expenditure financed by central and local government) and the costs in terms of national resources. The resource costs comprise most of the central and local government expenditure, and private expenditure, on higher education, together with the production lost to the economy when students are being educated instead of employed; but they exclude public sector student maintenance which in national accounting terms can be regarded as a form of transfer payment. There are both conceptual and practical difficulties involved in assessing resource costs and comparing them with public sector costs, notably in the assumptions made about forgone earnings, the 'resource' element of existing public expenditure, and the 'resource' consequences of marginal changes in provision. The statements of resource costs in this paper are simply indicative of the orders of magnitude involved, and should be treated with caution. No attempt has been made here to assess the economic benefits of the projected investment in higher education, against which the resource costs might be set.

## Recurrent unit costs of higher education institutions

6.4 Table 14 sets out, on the basis of tentative evidence, the average recurrent unit costs per student year in the three sectors of higher education: universities, advanced further education and colleges of education. Generally the figures represent total 1967-68 recurrent expenditure in each sector divided by the total number of students in that sector, the result being adjusted to 1969 prices. Present evidence suggests that unit costs are highest, on average, in universities and lower in advanced further education and in colleges of education. These costs, however, reflect differences between the three sectors of higher education in the subject 'mix', the levels of courses provided, the balance between teaching, research, and other activities, and the style and method of teaching. A change in the balance of subject-provision, or in the balance between teaching and research, would lead to a change in average recurrent costs. Within each sector, the average recurrent cost also encompasses wide variations, according to the size and nature of the institutions. Different patterns of development for the various institutions within any one sector could well alter its average recurrent cost from present levels. The costs in each sector are therefore not amenable to simple comparison.

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[1] For a fuller discussion, see Education Planning Paper No. 1 'Output Budgeting for the Department of Education and Science', H.M.S.O., 1970

## TABLE 14

**Units cost of higher education in 1967-68**
**(adjusted to 1969 Public Expenditure Survey prices**
**and rounded to the nearest £5)**

| | Universities | Advanced full-time further education | Colleges of education |
|---|---|---|---|
| **Recurrent costs** (£ per student year) | | | |
| 1. Total recurrent costs of institutions (a) | 1,045 | 600 | 395 |
| of which: | | | |
| 2. Privately financed | 120(b) | (c) | (c) |
| 3. Recurrent costs of institutions borne by the public sector | 925 | 600 | 395 |
| 4. Public sector student maintenance costs (d) | 320 | 290 | 415 |
| 5. **Total public sector recurrent costs** | 1,245 | 890 | 810 |
| 6. Forgone earnings of students (e) | 790 | 690 | 665 |
| **Capital costs** | | | |
| 7. Teaching places (£ per new place) (f) | 3,000 | 2,260 | 1,145 |
| 7a. Annual equivalent (£ per student year) (g) | 300 | 230 | 115 |
| 8. Equipment (£ per student year) | 80 | (h) | (h) |
| 9. **Total public sector costs, recurrent plus annual equivalent of capital** (£ per student year) (Sum of items 5, 7a and 8) | 1,625 | 1,120 | 925 |

(a) Total expenditure (including that on research) from all sources on teaching and non-teaching staff, consumable materials and maintenance, but excluding any element of imputed rent or loan charges.
(b) Non-government-financed expenditure, including fees from overseas students.
(c) No estimate available.
(d) Comprising awards for student maintenance, net public sector boarding costs for residential students in colleges of education, and an element reflecting the annuity equivalent of capital expenditure on residential accommodation (weighted according to the proportion of students in residence). See Table E of Appendix III.
(e) Estimate, excluding forgone earnings of overseas students. See Table D of Appendix III.
(f) Including acquisition of land, building costs and professional fees and initial furnishings. An apportioned share of the cost of circulatory space and of those recreational and catering facilities provided for all students, whether or not residential, is also included. Student residence is excluded.
(g) Amortised at 10 per cent interest over 60 years (10 years for specialised equipment in advanced further education).
(h) Equipment costs are included in items 7 and 7a.

6.5 The recurrent unit costs in Table 14, being calculated 'per student year', do not take account of possible differences in 'success rates' between the three sectors of higher education. Such differences would have to be taken into account in making any comparisons of the costs of gaining a qualification, and would be an element in any future analysis of the costs and benefits of higher education provision.

### The forgone earnings of students

6.6 That element of the total resource cost of higher education which is not directly reflected in public expenditure – namely, production lost while students are being educated – can be represented by the students' forgone earnings. In total, forgone production represents a 'cost' to the nation; in individual terms, forgone earnings can also be regarded as a 'cost' borne by the student. Estimates of forgone earnings per student, in 1969, are given in Table 14 and are set out more fully in Table D of Appendix III.

### Recurrent student maintenance unit costs

6.7 The 'cost' to the student represented by earnings forgone is, in part, offset by public sector transfer payments, in the form of student maintenance awards[1], capital provision for student residence, and boarding provision at colleges of education: these three categories are combined, as appropriate, in a single figure for public costs of student maintenance for each sector in Table 14. Details are given in Table E of Appendix III.

### Capital unit costs

6.8 Table 14 sets out the present average capital cost of a new place in each sector. Expenditure on equipment is included in the teaching place unit costs for colleges of education and for advanced further education, but is identified separately as a cost per student year for universities. As with recurrent costs, the average capital expenditure figures reflect the present structure of provision, and subsume a significant range of variation, according to the subject of study, the balance of teaching and research, and the size and nature of the institution. The capital costs of residential accommodation are not given explicitly in Table 14, though, as mentioned in paragraph 6.7, they are reflected as an element of recurrent expenditure under the item for student maintenance. The capital cost per additional residential place ranges in universities from £2,000 in traditional-type halls to as little as £1,000 in new self-catering accommodation; in advanced further education the situation is developing on similar lines, whilst in colleges of education the capital cost is fairly uniform at about £1,700 per residential place.

### Unit costs in the future

6.9 The recurrent unit costs in Table 14 are present average costs, not marginal costs. Appendix III discusses how far long-run changes in costs levels are occurring. Where there is no clear evidence of changes, as in advanced further education and colleges of education, the assumption has been made that future long-run marginal costs are equal to present average costs. On the other hand, in the case of universities adjustments to the figures of average cost in Table 14 have been made before applying them to projected student numbers, in order to reflect existing evidence on long-run changes; the adjustments are summarised in paragraph 6.12 below. Short-run variations in marginal costs, which may in some cases be quite substantial, have been ignored in this study.

6.10 Each of the unit costs in Table 14 is an average of a mixture of subjects and levels of course with varying costs. Their use in conjunction with projections of future numbers of students is strictly permissible only if the future students in a particular sector follow courses with the same 'mix' of subjects and of levels as the present students in that sector. There is also an implied assumption that other factors determining unit costs in a sector, such as methods of teaching or the balance between teaching and research, remain unchanged, unless the adjustments made to future unit costs can be held to reflect changes in these factors. It follows from this, and from the differences between the sectors in the balance of subjects and levels taught, that it is inappropriate to use the unit costs in Table 14 to examine the cost consequences of placing a group of students wishing to pursue a specified subject-mix at a particular level in one sector rather than another sector.

6.11 An important qualification must be expressed about the use of constant unit costs. They pay no regard to the 'relative price effect' in higher education — that is, to the likely growth in the cost of higher education in relation to other national expenditure, because of its labour-intensive nature, as earnings rise.[1] There are great difficulties in forecasting long-run movements in pay in real terms, on which any adjustment for 'relative price effect' would depend.

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[1] The term 'student maintenance awards' excludes the fees element of awards.

6.12 In the case of universities, recurrent unit costs have been assumed to change in the future under two opposing influences. On the one hand a gradual decline in unit costs of about 1 per cent per annum during the present quinquennium (ending 1972) has been extrapolated forward to 1977. On the other hand there is evidence that sophistication in equipment and new developments in subjects and techniques are likely to increase unit costs during the quinquennium to 1977 and in the subsequent quinquennium*. On balance recurrent unit costs in universities have been taken to develop as follows, taking 1966-67 as 100.

| 1966–67 | 1971–72 | 1976–77 | 1981–82 |
|---|---|---|---|
| *100* | *95* | *95* | *104* |

No account has been taken of any possible change from the present distribution of places between arts-based courses (45 per cent) and science-based courses (55 per cent), which would affect both recurrent and capital unit costs. On the capital side, the unit cost quoted in Table 14 allows for normal kinds of growth and development in universities. But there are also special demands for capital provision in universities — the expansion of medical schools and the extension of university computing capacity, for example, will make substantial demands over the next decade. An allowance has been made for such developments by adding rather more than a fifth to the basic cost per teaching place shown in Table 14.

* For a fuller discussion see Appendix III.2.

**Projected total expenditure**

6.13 Within the limitations discussed in paragraphs 6.9 to 6.12, and subject to the adjustments described there, the average unit costs in Table 14 can be used for a first exploration of the expenditure implications of the projected growth in student numbers set out in Chapter 5. The results are given in Table 15, for public expenditure and total resource costs, for four academic years: 1966-67 (both at out-turn prices and revalued at 1969 Public Expenditure Survey prices) and (at 1969 prices) the three future years 1971-72, 1976-77 and 1981-82. Three specific points concerning these calculations should be made:

(i) account has been taken of the different unit costs attributable to students from overseas;

(ii) broadly, it has been assumed that 10 per cent of the additional students would require residential provision. The 1969 proportions of students in residence were 39 per cent in both universities and colleges of education and 4 per cent in advanced further education;

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[1] The relative price effect is a national accounting term reflecting divergencies between monetary and real resource measures of the share of public expenditure in the national income. Constant price calculations are normally used for estimating real resources, an approach consistent with real earnings over the economy as a whole rising in line with productivity, i.e. with increased output at constant prices. Since for much of the public sector there are no independent measures of output like those obtainable for manufacturing, its output is conventionally equated to its input, i.e. the cost of goods and services consumed. In the absence of measured changes in educational productivity, a constant price for teaching services would thus give a constant valuation for educational output, but if the earnings of manpower employed in the education service are taken as rising with a nation-wide movement in real earnings, there is an apparent rise in educational costs and output, except in those instances where a given task is performed with fewer staff. For a fuller discussion of the 'relative price effect', see 'Public expenditure 1968-69 to 1973-74', Cmnd 4234, Appendix III.

(iii) the recurrent cost figures for universities for 1971-72 have been related to the expenditure envisaged for the final year of the quinquennium and to the numbers of university students now expected in 1971 (200,000), rather than to the 215,600 students postulated in the projection in Chapter 5.

TABLE 15

**Expenditure on full-time higher education, 1966-67 to 1981-82 (academic years)**

**England and Wales**

£ million

| | Actual 1966-67 | | Projected* | | |
|---|---|---|---|---|---|
| | Out-turn prices | Revalued in 1969 prices | 1971-72 | 1976-77 | 1981-82 |
| **Public expenditure (current and capital)** | | | | | |
| Universities | 238 | 249 | 300 | 420 | 570 |
| Advanced further education | 66 | 71 | 110 | 150 | 190 |
| Colleges of education | 77 | 83 | 100 | 100 | 100 |
| **Total** | 381 | 403 | 510 | 670 | 860 |
| **Resource costs (current and capital)** | | | | | |
| Universities | 319 | 341 | 420 | 600 | 820 |
| Advanced further education | 85 | 93 | 150 | 210 | 280 |
| Colleges of education | 96 | 104 | 130 | 130 | 140 |
| **Total** | 500 | 538 | 700 | 940 | 1,240 |

* At 1969 Public Expenditure Survey prices and rounded to the nearest £10m. These figures are very tentative.

6.14 The figures in Table 15 indicate approximate orders of magnitude. They show a projected rise in total public expenditure on full-time higher education in England and Wales from about £380 million at current prices in 1966-67 (revalued at approximately £400 million in 1969 prices) to £510 million in 1971-72 and £860 million in 1981-82 at constant 1969 prices.

### Projected total resource costs

6.15 The projection in Table 15 of total resource costs measures, in very broad terms, the increasing cost of higher education in terms of national economic resources. The cost would grow from about £500 million at current prices in 1966-67 (revalued at approximately £540 million in 1969 prices) to some £700 million in 1971-72 and to some £1,240 million in 1981-82 at 1969 constant prices. No corresponding statement is available of the extent to which higher education might contribute to a long-term increase in national resources.

### Projected growth rates of expenditure

6.16 Table 16 shows the projected average annual growth rates, both of public expenditure and of resource costs, for the successive quinquennia under review. The projected growth rates of resource costs are very tentative. They are somewhat larger than the corresponding growth rates of public sector costs, mainly as a result of the exclusion from resource costs of student maintenance (which declines with rising parental incomes) and of the inclusion of forgone earnings in direct proportion to student numbers. No estimate has been made of the proportion which the projected resource costs of higher education would take of the gross national product in future years; but it is evident that if the gross national product were to grow at less than 5 to 6 per cent per annum in real terms during the decade, higher education would on these assumptions absorb an increasing part of the national real resources.[1] Similar arguments apply to the growth of public expenditure on higher education in relation to the national income.

**TABLE 16**

**Higher education expenditure (at constant prices): projected average annual growth rates during each quinquennium**

**England and Wales**

Per cent per annum

| | 1966-67 to 1971-72 | 1971-72 to 1976-77 | 1976-77 to 1981-82 | Period 1971-72 to 1981-82 |
|---|---|---|---|---|
| **Public expenditure (current and capital)** | | | | |
| Universities | 3·8 | 7·3 | 6·1 | 6·7 |
| Advanced further education | 8·5 | 6·7 | 5·1 | 5·9 |
| Colleges of education | 3·4 | — | — | — |
| **All sectors** | 4·6 | 5·8 | 5·0 | 5·4 |
| **Resource costs (current and capital)** | | | | |
| Universities | 4·8 | 7·1 | 6·6 | 6·9 |
| Advanced further education | 9·6 | 7·3 | 6·0 | 6·7 |
| Colleges of education | 4·6 | 0·7 | 0·6 | 0·7 |
| **All sectors** | 5·4 | 6·0 | 5·7 | 5·9 |

### Total public expenditure on higher education by sector and by type of expenditure

6.17 Table 17 gives public expenditure figures at constant prices for the four selected years analysed both by higher education sector and by category of expenditure. Figure 6 gives the same information diagrammatically.

6.18 Annual capital expenditure in universities and advanced further education is projected to rise to a peak in the late 1970's, thereafter declining slightly in anticipation of a somewhat lower projected growth rate in student numbers in the early 1980's. The growth in capital expenditure is projected to be faster, and to fall off less sharply, in universities than in advanced further education, mainly because of the different patterns of growth of the two sectors during and after the period under review. Capital outlay in colleges of education is assumed to decline, in view of the stabilisation of numbers entering that sector; the fall would be greater, were it not postulated that some provision would be made for replacement and improvement of existing buildings. Recurrent expenditure excluding student maintenance is projected generally in proportion to student numbers in each sector

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[1] 'Economic prospects to 1972 — a revised assessment' (H.M.S.O. 1970) gives an average annual percentage increase in gross domestic product over the years 1969 to 1972 of 3 per cent in the 'basic' case and 3¾ per cent in the 'higher' case.

## TABLE 17

### Total public expenditure on full-time higher education

### England and Wales

£ million*

| | Universities | Advanced full-time further education | Colleges of education | All sectors |
|---|---|---|---|---|
| Public sector student maintenance† | | | | |
| 1966-67 actual | 49 | 16 | 36 | 101 |
| 1971-72 projected | 59‡ | 26 | 46 | 131 |
| 1976-77 projected | 75 | 34 | 45 | 154 |
| 1981-82 projected | 94 | 43 | 44 | 181 |
| Other current expenditure | | | | |
| 1966-67 actual | 142 | 33 | 40 | 215 |
| 1971-72 projected | 176‡ | 63 | 46 | 285 |
| 1976-77 projected | 251 | 88 | 49 | 388 |
| 1981-82 projected | 380 | 122 | 51 | 553 |
| Capital expenditure‖ | | | | |
| 1966-67 actual | 58 | 22 | 7 | 87 |
| 1971-72 projected | 65 | 18 | 6 | 89 |
| 1976-77 projected | 99 | 24 | 3 | 126 |
| 1981-82 projected | 99 | 21 | 2 | 122 |
| **Total expenditure** | | | | |
| 1966-67 actual | 249 | 71 | 83 | 403 |
| 1971-72 projected | 300 | 107 | 98 | 505 |
| 1976-77 projected | 425 | 146 | 97 | 668 |
| 1981-82 projected | 573 | 186 | 97 | 856 |

* At 1969 Public Expenditure Survey prices.

† Including net public sector boarding costs in colleges of education.

‡ University current expenditure figures for 1971-72 are consistent with the budgeted expenditure for the end of the present university quinquennium, and with a figure of 200,000 students in 1971 rather than the 215,600 places for that year appearing in the projection in Chapter 5 (see paragraph 2.9). The 1969 Public Expenditure Survey prices in which the expenditure figures in this table are expressed do not reflect all the price and salary increases which occurred in 1969.

‖ Including equipment costs in all sectors.

whilst spending on student maintenance is tied broadly to student numbers but with an allowance for rising parental contributions.[1] Thus, the share of total public expenditure on higher education taken up by capital spending in all sectors (which was 22 per cent in 1966-67) is projected to rise slightly from 18 per cent in 1971-72 to 19 per cent in 1976-77, and then to fall back to 14 per cent by 1981-82. The share taken by student maintenance is projected to decline steadily from 26 per cent in 1971-72 to 21 per cent in 1981-82 (compared with 25 per cent in 1966-67). But other recurrent expenditure would form an increasing proportion of total expenditure, rising from 56 per cent in 1971-72 to 65 per cent in 1981-82 (compared with 53 per cent in 1966-67).

6.19 Between 1971-72 and 1981-82, public spending on the universities is projected almost to double, although the growth rate is lower in the second half of the period than in the first (see Table 16). The growth rate in public expenditure on advanced further education over the same period is projected to be marginally smaller than for the universities, and is

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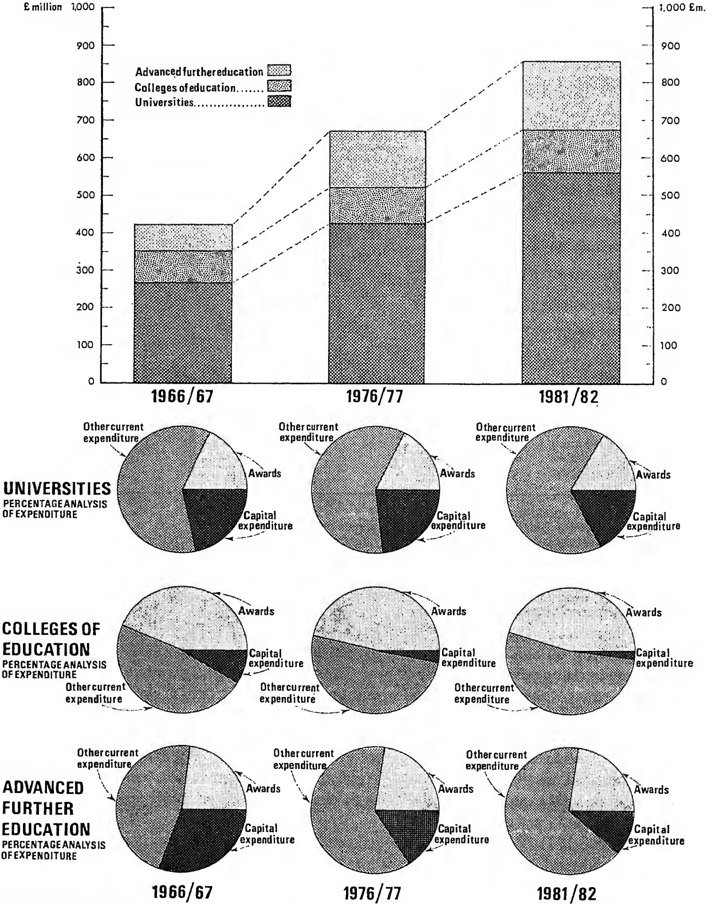
[1] See Appendix III.11.

Figure 6

# ACTUAL AND PROJECTED TOTAL PUBLIC EXPENDITURE ON FULL-TIME HIGHER EDUCATION — ENGLAND AND WALES



NOTE: 'Awards' refers to student maintenance awards only, not fees.

greatest in the earlier part of the decade. For colleges of education, however, public expenditure is assumed to remain virtually static as a result of the stabilisation of the entry; the slow growth of student numbers is almost entirely compensated for, in terms of expenditure, by the postulated fall in capital expenditure and the average value of awards. On these assumptions, which take no account of any possible future change in the rôle of colleges of education within the higher education system, the colleges of education would absorb a proportion of total public expenditure on higher education decreasing to 11 per cent in 1981-82, compared with 20 per cent in 1966-67. On the other hand, the proportion absorbed by universities is postulated to expand (after a fall from 62 per cent in 1966-67) from 59 per cent in 1971-72 to 67 per cent by 1981-82; with advanced further education retaining a relatively constant proportion, between 21 and 22 per cent, throughout the decade up to 1981-82, compared with 18 per cent in 1966-67.

## 7. CONCLUSION

7.1 The following paragraphs summarise some of the principal features of the projection described in this paper. There is no Government commitment to the size, pattern or cost of higher education provision implied by the projection.

### G.C.E. attainments

7.2 During the period up to 1981, the numbers of school leavers in England and Wales who gain two or more G.C.E. 'A' level passes are projected to increase significantly: for boys, from about 44,000 in 1968 (12 per cent of the age group) to 97,000 by 1981 (23 per cent); and for girls, from 30,000 (9 per cent of the age group) to 75,000 (19 per cent) over the same period. The growth in the numbers of leavers with one 'A' level and of those with 5 or more 'O' levels but no 'A' levels is projected to be of a similar magnitude. Much the larger part of this expansion is attributable to the increasing tendency of boys and girls to stay on at school beyond the statutory leaving age and to gain G.C.E. qualifications; recent staying-on trends have been extrapolated forward through the 1970's. The growth in the total size of the relevant age group is a relatively minor factor. The projections given in this paper of school leavers with qualifications appropriate for entry to higher education are substantially greater than those given in the Robbins Committee's report.

### Entry to full-time higher education

7.3 In this paper, the projections of the entry to full-time and sandwich courses in universities and advanced further education in England and Wales have been related to the growing numbers of school leavers, and others, with appropriate qualifications. But it has been assumed that, as is the case at present, not all of those with the nominal 'minimum' G.C.E. qualifications would be admitted. It is postulated that broadly constant proportions of the flow of school leavers at each relevant level of G.C.E. qualification (i.e. 3 'A' and 2 'A' levels) would enter universities through the 1970's; the proportions which entered in the early 1960's have been adopted for this purpose. The numbers admitted to colleges of education have been related to projected requirements for trained teachers, and in this paper are postulated to remain constant. This implies that a progressively smaller proportion of school leavers with G.C.E. qualifications (especially of the less well-qualified) would enter initial non-graduate teacher training; but it is assumed that some of those who would be unable to obtain entry would instead pursue courses in advanced further education. In consequence, the proportions of school leavers with 1 or 2 'A' levels who would enter advanced further education are projected to increase during the decade, whilst, amongst school leavers with more 'A' levels, the proportions who would enter are assumed to remain constant. Projections have also been prepared for entrants to each sector of higher education from sources other than direct from school, i.e. from further education establishments, from employment and from overseas. The total entry to all sectors of full-time higher education in England and Wales is projected, on the assumptions set out in this paper, to increase from 107,000 in 1967 to 218,000 in 1981, an average rate of growth of over 5 per cent a year.

### Places in full-time higher education

7.4 The entry figures, together with assumptions about the effective length of course in the different sectors of higher education, lead to a figure of 727,000 places in full-time higher education in England and Wales in 1981, compared with 331,000 in 1967. Of the 1981 total, universities would provide about 54 per cent of places (compared with 51 per cent in 1967), colleges of education 18 per cent (29 per cent in 1967), and advanced further education 28 per cent (20 per cent in 1967). About 62 per cent of all places in 1981 would be occupied by men and 38 per cent by women, compared with 61 per cent and 39 per cent respectively in 1967.

### Cost of full-time higher education

7.5 The projections of student numbers have been converted into figures of expenditure using the assumptions about unit costs described in Chapter 6. The projections imply total public expenditure on full-time higher education in England and Wales, at 1969 constant prices of about £510m. in 1971-72 and £860m. in 1981-82, compared with about £400m. in 1966-67 (revalued at 1969 prices). These figures inevitably have a considerable margin of uncertainty. They show an annual rate of growth averaging 5·4 per cent between 1971 and 1981.

### Higher education in Scotland

7.6 This paper does not discuss higher education in Scotland, because there are significant differences in the structure and administration of higher education, between England and Wales on the one hand and Scotland on the other, which necessitate separate treatment. But it may be noted that the addition of broadly corresponding projections for Scotland could lead to a total of about 835,000 full-time places in higher education in Great Britain by 1981, of which over 460,000 might be in universities. Total public expenditure on full-time higher education in Great Britain might then be about £590m. in 1971-72 (at 1969 prices) and £980m. in 1981-82, compared with about £460m. in 1966-67 (revalued at 1969 prices).

# APPENDIX I

## DESTINATION OF QUALIFIED SCHOOL LEAVERS

I.1 The projected numbers of pupils leaving school with various qualifications were discussed in Chapter 3. In the light of the past destinations of these school leavers, and of the Robbins postulate that the proportion of qualified school leavers who enter courses in higher education should not, in the long term, fall below the levels reached in the early 1960's, the following pattern of destinations has been taken as a basis for projecting entry into full-time and sandwich courses in higher education.

I.2 The numbers, and percentage distribution by destination, of school leavers with 3 or more, with 2, and with 1 'A' level, and with 5 or more 'O' levels but not 'A' levels, are shown in Table A at the end of this Appendix, as projected for selected years and with comparable figures for 1962 and 1967.

### School leavers with 2 or more 'A' levels

I.3 The respective proportions of boy and girl school leavers with 3 or more 'A' level passes, and with 2 'A' levels, who proceed to university have been assumed to regain by 1971 the corresponding proportions achieved in the early 1960s, and to remain constant from 1971 onwards. This improvement in entry opportunity seemed an appropriate postulate in considering a pattern of longer term development, although it is now unlikely to be achieved by 1971.

I.4 The entry pattern postulated for colleges of education, being based on teacher supply considerations, has to accommodate both mature students and school leavers; and, within the latter group, those possessing the various levels of qualification. This is discussed in paragraph 4.8: in brief, it has been postulated that colleges of education will remain the destination of (a) a **constant** proportion of school leavers with 3 or more 'A' levels and of boys leaving with 2 'A' levels; (b) a **declining** porportion of girls leaving with 2 'A' levels.

I.5 Among school-leavers with 3 or more 'A' levels, the currently growing proportions who are admitted to full-time and sandwich courses in advanced further education have been assumed to continue to rise until 1970 for boys, and until 1972 for girls, remaining constant thereafter. In the same way a constant proportion of boys with 2 'A' levels is projected to enter advanced further education from 1973 onwards; but for similarly qualified girls the proportion in the late 1970's has been increased, on the grounds that some of the girls unable to gain places in colleges of education will enter advanced further education courses instead.

I.6 These assumptions imply a considerable diminution by 1971 from the present proportion of boys with 2 or more 'A' levels who go into employment or professional training outside the higher education system. Their numbers, however, after an initial decline in the early 1970's, would increase rapidly, reaching a figure nearly 50 per cent higher in 1981 than in 1967: this is due to the progressive growth in overall numbers of qualified school leavers. Similarly, the projections imply a small reduction in the early 1970's, compared with recent years, in the proportion of girls with 2 or more 'A' levels who enter non-advanced courses in further education or employment, followed by an increase towards the end of the decade; but their numbers would continue to grow slowly at first, accelerating towards 1980.

### Other qualified school leavers

I.7 It has been assumed that future admissions to university of school leavers with one 'A' level or less will be negligible. Entry to colleges of education of leavers with 1 'A' level is assumed to fall by 1981 to 9 per cent of all leavers with 1 'A' level, both for boys and for girls, compared with present proportions of about 15 and 50 per cent respectively. The proportions of leavers with 5 or more 'O' levels but no 'A' levels who are admitted to colleges of education are assumed to fall to 2 per cent for boys and 5 per cent for girls by 1981. The proportions of school leavers with 1 'A' level who enter full-time and sandwich advanced courses in further education have been rising. In the first stage of the argument it was assumed that these proportions would nonetheless remain stable throughout the 1970's. During this period, however, the assumed limit on numbers entering the colleges of education implies that increasing numbers of school leavers with 1 'A' level who might otherwise have obtained places in colleges of education will not be able to do so. It has been assumed that an arbitrary proportion of them will instead obtain places in advanced further education. On these hypotheses, the proportions of school leavers with 1 'A' level who enter full-time and sandwich advanced courses in further education would rise by 1981 to 28·5 per cent for boys and 16 per cent for girls. In absolute numbers, these assumptions for colleges of education and advanced further education imply a doubling of the numbers of boy school leavers with 1 'A' level proceeding to higher education (from 3,500 in 1967 to 7,000 in 1981), but a fairly constant number of girl school leavers (about 5,500). Apart from colleges of education, no provision has been assumed in higher education for school leavers without 'A' levels.

I.8 On the assumption set out above, the numbers of school leavers with 1 'A' level who would not enter a full-time or sandwich course in higher education would double in the case of boys, from about 5,500 in 1967 to over 11,500 in 1981, and would quadruple in the case of girls, from about 4,000 in 1967 to 16,000 in 1981. If the numbers of these people seeking places on full-time or sandwich **non-advanced** courses in further education were to increase *pro rata*, there would be significant implications for that sector of education; but this point is not further discussed here.

I.9 The numbers of school leavers with 5 or more 'O' levels but without 'A' levels admitted to higher education would, on the assumptions set out, fall from about 5,000 in 1967, taking boys and girls together, to under 3,000 in 1981; all the latter are assumed to enter colleges of education.

### TABLE A(i)

### Distribution by destination of school leavers: Boys

### England and Wales

Thousands

| | Universities* | Colleges of education* | Advanced further education* | Remainder† | Total |
|---|---|---|---|---|---|
| With 3 or more 'A' level passes | | | | | |
| 1962 actual | 15·5 | 0·7 | 1·6 | 3·1 | 20·9 |
| 1967 actual | 20·1 | 0·8 | 3·2 | 5·4 | 29·4 |
| 1971 projected | 27·2 | 0·9 | 4·5 | 3·6 | 36·3 |
| 1976 projected | 36·7 | 1·2 | 6·1 | 4·9 | 48·9 |
| 1981 projected | 50·2 | 1·7 | 8·4 | 6·7 | 66·9 |
| With 2 'A' level passes | | | | | |
| 1962 actual | 2·5 | 0·9 | 1·2 | 4·4 | 9·0 |
| 1967 actual | 3·7 | 1·5 | 3·2 | 5·9 | 14·3 |
| 1971 projected | 4·7 | 1·7 | 4·7 | 5·7 | 16·8 |
| 1976 projected | 6·2 | 2·2 | 6·6 | 7·1 | 22·1 |
| 1981 projected | 8·4 | 3·0 | 9·0 | 9·6 | 29·9 |
| With one 'A' level pass | | | | | |
| 1962 actual | 0·2 | 1·0 | 0·8 | 4·0 | 5·9 |
| 1967 actual | 0·1 | 1·4 | 1·9 | 5·5 | 9·0 |
| 1971 projected | — | 1·7 | 2·7 | 6·3 | 10·6 |
| 1976 projected | — | 2·2 | 3·5 | 8·3 | 14·0 |
| 1981 projected | — | 1·7 | 5·4 | 11·8 | 18·9 |
| With 5 or more 'O' level but no 'A' level passes | | | | | |
| 1962 actual | 0·2 | 0·5 | — | 19·9 | 20·6 |
| 1967 actual | 0·1 | 1·0 | 0·3 | 20·2 | 21·5 |
| 1971 projected | — | 1·2 | — | 22·9 | 24·1 |
| 1976 projected | — | 0·8 | — | 28·7 | 29·5 |
| 1981 projected | — | 0·7 | — | 34·7 | 35·4 |

* Including school leavers entering higher education via 'temporary employment'.

† Residual item including those entering non-advanced further education or employment or professional training outside the specified sectors of higher education.

## TABLE A (i) (continued)

### Distribution by destination of school leavers: Boys

### England and Wales

Percentage

| | Universities* | Colleges of education* | Advanced further education* | Remainder† | Total |
|---|---|---|---|---|---|
| With 3 or more 'A' level passes | | | | | |
| 1962 actual | *74·3* | *3·1* | *7·9* | *14·6* | *100* |
| 1967 actual | *68·3* | *2·7* | *10·7* | *18·2* | *100* |
| 1971 projected | *75·0* | *2·5* | *12·5* | *10·0* | *100* |
| 1976 projected | *75·0* | *2·5* | *12·5* | *10·0* | *100* |
| 1981 projected | *75·0* | *2·5* | *12·5* | *10·0* | *100* |
| With 2 'A' level passes | | | | | |
| 1962 actual | *27·6* | *9·7* | *13·7* | *49·0* | *100* |
| 1967 actual | *26·1* | *11·0* | *22·0* | *41·2* | *100* |
| 1971 projected | *28·0* | *10·0* | *28·0* | *34·0* | *100* |
| 1976 projected | *28·0* | *10·0* | *30·0* | *32·0* | *100* |
| 1981 projected | *28·0* | *10·0* | *30·0* | *32·0* | *100* |
| With 1 'A' level pass | | | | | |
| 1962 actual | *3·2* | *16·1* | *13·4* | *67·3* | *100* |
| 1967 actual | *1·1* | *15·5* | *21·4* | *62·0* | *100* |
| 1971 projected | — | *16·0* | *25·0* | *59·0* | *100* |
| 1976 projected | — | *16·0* | *25·0* | *59·0* | *100* |
| 1981 projected | — | *9·0* | *28·5* | *62·5* | *100* |
| With 5 or more 'O' level but no 'A' level passes | | | | | |
| 1962 actual | *1·1* | *2·5* | — | *96·4* | *100* |
| 1967 actual | *0·2* | *4·7* | *1·4* | *93·6* | *100* |
| 1971 projected | — | *5·0* | — | *95·0* | *100* |
| 1976 projected | — | *3·0* | — | *97·0* | *100* |
| 1981 projected | — | *2·0* | — | *98·0* | *100* |

*, † See notes on page 40.

## TABLE A (ii)

### Distribution by destination of school leavers: Girls

### England and Wales

Thousands

| | Universities* | Colleges of education* | Advanced further education* | Remainder† | Total |
|---|---|---|---|---|---|
| With 3 or more 'A' level passes | | | | | |
| 1962 actual | 6·5 | 1·9 | 0·5 | 1·9 | 10·8 |
| 1967 actual | 9·7 | 2·6 | 1·1 | 3·4 | 16·8 |
| 1971 projected | 14·1 | 3·5 | 1·8 | 4·1 | 23·5 |
| 1976 projected | 20·3 | 5·1 | 2·7 | 5·8 | 33·9 |
| 1981 projected | 28·9 | 7·2 | 3·9 | 8·2 | 48·1 |
| With 2 'A' level passes | | | | | |
| 1962 actual | 0·8 | 3·4 | 0·5 | 2·4 | 7·1 |
| 1967 actual | 1·4 | 4·6 | 1·1 | 4·1 | 11·1 |
| 1971 projected | 2·2 | 6·2 | 1·6 | 4·7 | 14·7 |
| 1976 projected | 3·0 | 8·3 | 2·2 | 6·3 | 19·7 |
| 1981 projected | 4·1 | 7·9 | 4·3 | 10·7 | 27·0 |
| With one 'A' level pass | | | | | |
| 1962 actual | 0·1 | 2·9 | 0·3 | 2·6 | 5·9 |
| 1967 actual | — | 4·8 | 0·6 | 3·9 | 9·3 |
| 1971 projected | — | 4·5 | 1·2 | 6·1 | 11·8 |
| 1976 projected | — | 2·4 | 2·5 | 11·1 | 16·0 |
| 1981 projected | — | 2·0 | 3·4 | 16·3 | 21·7 |
| With 5 or more 'O' level but no 'A' level pass | | | | | |
| 1962 actual | 0·1 | 2·9 | — | 25·6 | 28·6 |
| 1967 actual | — | 3·4 | 0·1 | 24·5 | 28·1 |
| 1971 projected | — | 2·8 | — | 26·3 | 29·1 |
| 1976 projected | — | 2·4 | — | 31·9 | 34·2 |
| 1981 projected | — | 2·0 | — | 38·3 | 40·3 |

*Including school leavers entering higher education via 'temporary employment'.

† Residual item including those entering non-advanced further education or employment or professional training outside the specified sectors of higher education.

## TABLE A (ii) (continued)

### Distribution by destination of school leavers: Girls

### England and Wales

Percentage

| | Universities* | Colleges of education* | Advanced further education* | Remainder† | Total |
|---|---|---|---|---|---|
| With 3 or more 'A' level passes | | | | | |
| 1962 actual | *60·2* | *17·4* | *4·9* | *17·5* | *100* |
| 1967 actual | *57·7* | *15·4* | *6·7* | *20·3* | *100* |
| 1971 projected | *60·0* | *15·0* | *7·5* | *17·5* | *100* |
| 1976 projected | *60·0* | *15·0* | *8·0* | *17·0* | *100* |
| 1981 projected | *60·0* | *15·0* | *8·0* | *17·0* | *100* |
| With 2 'A' level passes | | | | | |
| 1962 actual | *10·7* | *47·5* | *8·1* | *33·8* | *100* |
| 1967 actual | *12·5* | *41·4* | *9·5* | *36·6* | *100* |
| 1971 projected | *15·0* | *42·0* | *11·0* | *32·0* | *100* |
| 1976 projected | *15·0* | *42·0* | *11·0* | *32·0* | *100* |
| 1981 projected | *15·0* | *29·5* | *16·0* | *39·5* | *100* |
| With one 'A' level pass | | | | | |
| 1962 actual | *0·9* | *48·9* | *5·6* | *44·7* | *100* |
| 1967 actual | *0·2* | *51·2* | *6·5* | *42·2* | *100* |
| 1971 projected | — | *38·0* | *10·5* | *51·5* | *100* |
| 1976 projected | — | *15·0* | *15·5* | *69·5* | *100* |
| 1981 projected | — | *9·0* | *16·0* | *75·0* | *100* |
| With 5 or more 'O' but no 'A' level passes | | | | | |
| 1962 actual | *0·3* | *10·0* | — | *89·7* | *100* |
| 1967 actual | *0·4* | *12·2* | *0·3* | *87·4* | *100* |
| 1971 projected | — | *9·5* | — | *90·5* | *100* |
| 1976 projected | — | *7·0* | — | *93·0* | *100* |
| 1981 projected | — | *5·0* | — | *95·0* | *100* |

*, † See notes on page 42.

## APPENDIX II

## INITIAL ENTRANTS TO AND PLACES IN HIGHER EDUCATION

Table C gives the figures, for each year from 1961 to 1981, of initial entrants to and places in the three sectors of higher education. Those for the years 1961 to 1967 are actual figures; below the line in the table (from 1968 to 1981) the figures are those projected in this paper.

Since these projections were made, actual figures for 1968 have become available, as well as the majority of the figures for 1969 on a provisional basis; these are given in Table B below. Actual entry to universities and colleges of education in 1968 was slightly below the projection but entry to advanced further education was above the projected figure. The provisional 1969 entry figure for universities is some 6 per cent below the projected figure and university places are also below the projected figure. On the basis of the provisional information, total student numbers in 1969 in all sectors of higher education taken together fall some 2 per cent short of the projected numbers.

**TABLE B**

**Initial entrants to and places in higher education, 1968 and 1969**

Thousands

| | 1968 (actual) | | 1969 (provisional actual) | |
|---|---|---|---|---|
| | Entrants | Places | Entrants | Places |
| Universities | 48·7 | 177·5 | 50·3 | 184·2* |
| Colleges of education | 38·2 | 106·4 | 38·0 | 111·5 |
| Advanced further education | 28·8 | 76·4 | 29·4 | 82·9 |
| **Total** | 115·7 | 360·3 | 117·7 | 378·6 |

* Due to a change in the method of counting full-time postgraduates, this figure is not on a comparable basis to other figures of university places appearing in this paper. A figure of 186,000 may be taken for 1969 for purposes of comparison.

The latest available information suggests that in 1971, the last year of the current quinquennium, the actual number of initial entrants to universities will be about 55,000 and student numbers will not be far short of 200,000. This latter figure is about 15,000 more than envisaged in the 1967 quinquennial settlement, but some 15,000 less than the figure given by the present projection. See paragraph 2.9.

## TABLE C

### Initial entrants to and places in full-time and sandwich higher education, 1961 to 1981

### England and Wales

Thousands

| | Entrants | | | | Places | | | |
|---|---|---|---|---|---|---|---|---|
| | Universities | Colleges of education | Advanced further education | Total | Universities | Colleges of education | Advanced further education | Total |
| **Actual** | | | | | | | | |
| 1961 | 29·8 | 16·6 | 9·5 | 55·9 | 102·5 | 36·6 | 23·8 | 162·9 |
| 1962 | 31·7 | 17·6 | 11·0 | 60·3 | 108·7 | 48·6 | 28·0 | 185·3 |
| 1963 | 32·6 | 21·5 | 13·5 | 67·6 | 116·0 | 55·6 | 33·3 | 204·9 |
| 1964 | 36·4 | 24·5 | 15·1 | 76·0 | 127·2 | 63·9 | 39·6 | 230·7 |
| 1965 | 42·4 | 28·7 | 17·4 | 88·5 | 140·5 | 74·5 | 47·0 | 262·0 |
| 1966 | 43·9 | 33·5 | 21·1 | 98·5 | 154·5 | 86·5 | 54·5 | 295·5 |
| 1967 | 46·6 | 35·4 | 25·4 | 107·4 | 167·6 | 97·1 | 66·0 | 330·7 |
| **Projected** | | | | | | | | |
| 1968 | 49·4 | 38·6 | 26·9 | 114·9 | 179·1 | 108·1 | 75·6 | 362·8 |
| 1969 | 53·3 | 39·0 | 29·5 | 121·8 | 189·2 | 113·6 | 85·1 | 387·9 |
| 1970 | 57·9 | 39·0 | 32·6 | 129·5 | 202·2 | 116·6 | 93·6 | 412·4 |
| 1971 | 61·4 | 39·0 | 35·2 | 135·6 | 215·6 | 118·0 | 103·2 | 436·8 |
| 1972 | 63·9 | 39·0 | 37·1 | 140·0 | 228·6 | 118·7 | 112·0 | 459·3 |
| 1973 | 65·8 | 39·0 | 38·4 | 143·2 | 240·2 | 119·4 | 118·5 | 478·1 |
| 1974 | 72·2 | 39·0 | 42·8 | 154·0 | 254·0 | 120·4 | 126·6 | 501·0 |
| 1975 | 76·7 | 39·0 | 45·8 | 161·5 | 268·8 | 122·0 | 135·7 | 526·5 |
| 1976 | 82·3 | 39·0 | 48·6 | 169·9 | 286·9 | 124·2 | 146·3 | 557·4 |
| 1977 | 86·9 | 39·0 | 51·3 | 177·2 | 306·9 | 127·0 | 155·9 | 589·8 |
| 1978 | 92·8 | 39·0 | 54·9 | 186·7 | 326·7 | 127·8 | 165·8 | 620·3 |
| 1979 | 99·2 | 39·0 | 59·2 | 197·4 | 348·3 | 128·4 | 177·0 | 653·7 |
| 1980 | 105·6 | 39·0 | 63·5 | 208·1 | 370·8 | 129·0 | 189·8 | 689·6 |
| 1981 | 111·5 | 39·0 | 67·5 | 218·0 | 394·4 | 129·6 | 203·1 | 727·1 |

## APPENDIX III

## AN ANALYSIS OF THE UNIT COSTS OF HIGHER EDUCATION

III.1 The estimates of recurrent and capital unit costs given in Table 14 (Chapter 6 of this paper) generally relate to 1967-68 but have been expressed in terms of 1969 Public Expenditure Survey prices. In so far as (a) they are weighted averages of data which exhibit substantial ranges, and (b) they relate to existing patterns of provision, the figures as they stand necessarily form only a tentative basis for future projections of expenditure on an expanding service. Any alteration in standards of provision, whether as a deliberate policy or as a consequence of autonomous changes in the balance of courses or in teaching methods, could lead to a change in unit costs.

### University teaching unit costs

III.2 Information collected by the University Grants Committee[1] indicates that recurrent unit costs are higher (subject for subject) in the former Colleges of Advanced Technology and in London than the average for all universities. Investigations into the nature and extent of possible economies of scale in universities have been going forward in several places: in the University Grants Committee, through the Committee of Vice-Chancellors and Principals, in a project sponsored by the Department of Education and Science and the Organisation for Economic Co-operation and Development at the Universities of Bradford and Lancaster, and in the Department of Education and Science. Evidence has accumulated suggesting that in at least some disciplines such economies are associated with larger departments.[2] These investigations provide evidence to support the postulate adopted here that there will be a continuation of the decline in average recurrent unit costs in universities that has become evident in the present quinquennium. However, the uncertainty of the net balance of economies and diseconomies of scale when universities progress beyond the present average size of department is a reason for caution in projecting the present fall in unit costs beyond the relatively near future. The 1 per cent per annum reduction in recurrent unit cost in the present quinquennium has therefore been projected forward to 1976-77 but not thereafter.

III.3 On the other hand it has been recognised that increasing sophistication of equipment and new departures in teaching and research are likely to demand additional funds. An annual improvement factor has therefore been phased in over the quinquennium 1972 to 1977 and has been continued at 2 per cent per annum growth rate during the following quinquennium 1977 to 1982. The net balance of the factors discussed in this paragraph and the preceding paragraph is set out in paragraph 6.12; and the university recurrent unit costs given in Table 14 have been adjusted accordingly for the purposes of applying them to the future projections of student numbers. It has been assumed that privately-financed contributions to university expenditure in the future will remain at their present proportion of the total.

### Advanced further education teaching unit costs

III.4 There are a number of differences in the nature of the courses provided in advanced further education and in universities. For most subjects, a student in advanced further education commonly receives more direct tuition and supervision from teaching staff than does his counterpart in the universities.[1] This difference is, however, less marked in science and technology than in other subjects, and is probably negligible when former Colleges of Advanced Technology and polytechnics are compared. In further education, terms are longer; teachers customarily devote more time to teaching; considerably less research is conducted; and there is a much lower proportion of postgraduates. Moreover further education caters also for a large number of part-time students, and this of itself may affect the unit cost of provision for full-time students. Cost investigations for the Pooling Committee concerned with L.E.A. pooled expenditure indicate a wide variation in the costs of advanced courses as between individual colleges, in contrast to the relatively more homogeneous university sector; and this variation is not wholly explained by differences in institutional size or in the balance between advanced and non-advanced studies or between full-time and part-time studies. For these reasons, any comparison between present average teaching costs in advanced further education and in universities should be treated with great caution.

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[1] *Statistics of Education 1967, Volume 6,* Table 68 and unpublished U.G.C. returns.

[2] The arguments of principle for expecting such economies are set out by Dr. E. Rudd in the 'Universities Quarterly' for December 1968.

III.5 There is no firm evidence about the trend of recurrent costs in advanced further education. In principle they could differ in the future from present average costs in either direction. The need to build up departments capable of high level teaching may, as appears to have been the experience of the former Colleges of Advanced Technology, lead to increased marginal costs. On the other hand, once these departments have been developed (for instance, in the polytechnics) average costs may fall if advantage is taken of economies of scale. Any change in the subject-mix, away from science and technology towards the arts, social studies and business studies courses could also reduce costs. In the absence of evidence it is assumed that these factors would balance each other out for the period under consideration.

### College of education teaching unit costs

III.6 Average recurrent unit teaching costs per student-year in colleges of education are lower than the average in universities or further education institutions, *inter alia* because there is a smaller science and technology element in the courses. The range of variation between colleges is relatively smaller than in the other two sectors.

III.7 During their recent expansion, the colleges of education were able to exploit economies in regard to recurrent expenditure, and this is reflected in the present average unit cost. But the size above which further economies of scale have in the past ceased to be realised appears to be fairly low (around 400 to 500 students). It is to be expected that some further economies will be produced by the recent work on staffing and expenditure norms carried out by the Pooling Committee concerned with L.E.A. pooled expenditure; but the economies are not expected to be substantial in relation to the costs set out in this paper. On the other hand, the development of fourth-year Bachelor of Education courses in colleges may increase recurrent unit costs, although there is no evidence of it yet. This paper assumes that, on balance, the existing recurrent unit cost given in Table 14 will apply in the future.

### The forgone earnings of students

III.8 The loss in production attributable to the continued education of students who might otherwise have been employed has been represented by estimates of the salaries which they might have received, after deducting their actual earnings (in vacation or other jobs) while students. Following the method adopted in the Robbins Report, the gross pay of civil servants[1] with broadly the same academic qualifications as students has been taken as the measure of the full-time employment prospects open to students, adopting the assumption that civil service salaries reflect those in comparable occupations identified by the Pay Research Unit. Estimates of students' actual earnings have been derived from past surveys of vacation employment and, additionally for postgraduates, of part-time teaching duties during term. The resulting estimates of forgone earnings in Table D below should be regarded as no more than a guideline. This measure of resource costs takes no account of the distributional changes between public and private sectors arising from taxation revenue and social security contributions forgone.

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[1] cf. Robbins Report, Appendix Two (B), Part IV, H.M.S.O., Cmnd. 2154, 1963.

### TABLE D

**Forgone earnings per student, 1969**

£ per annum

| | (1) Assumed potential earnings if not a student | (2) Estimated actual earnings as a student | (3) Forgone earnings =columns (1) less (2) |
|---|---|---|---|
| Sector | | | |
| Universities | | | |
| Postgraduate | 1,115 | 160 | 955 |
| Undergraduate | 815 | 60 | 755 |
| Advanced further education student | 750 | 60 | 690 |
| College of education student | 725 | 60 | 665 |

All figures are tentative estimates.
Column (1) Based on Civil Service salary scales at 1.1.1969.
Column (2) Derived from the Hale Committee on University Teaching Methods, and other sources: updated to 1969 prices.

III.9 There is no reliable means of assessing long-term changes in the real level of forgone earnings of students, in the absence of projections of relative movements in salaries. It is assumed that the forgone earnings per student remain constant.

### The public sector unit cost of student maintenance

III.10 The way in which the public sector offsets the students' forgone earnings is, in national accounting terms, a transfer payment, and represents in one sense a subsidy by the community for investment by individuals and their families in higher education. It comprises awards for student maintenance, net public sector boarding costs for residential students in colleges of education, and an element reflecting the annuity equivalent of capital expenditure and capital grants for residential accommodation for students in all sectors of higher education. Table E shows these components of public sector student maintenance averaged over all the students in each sector, including some receiving no maintenance award and some not in residence; hence the averages shown are lower than for fully-resident students receiving full maintenance awards. The estimates are based on 1967-68 data on student numbers to which have been applied 1969 rates of award. The annuity equivalent of the capital cost of residential accommodation has been calculated on the basis of the average cost per place in existing halls of residence, amortised over an appropriate period, and takes no account of alternative lower-cost schemes for student residence with reduced standards of provision, whether publicly or privately financed.

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[1] Adjusted for certain assumed differentials between the public and private sector by adding 6 per cent.

**TABLE E**

**Public sector student maintenance costs per student year***

**England and Wales**

**£ per annum at 1969 rates**

| | Average maintenance award (excluding fees) | Average net public sector boarding costs (colleges of education) | Annuity equivalent of capital costs of residence† | Total public sector costs |
|---|---|---|---|---|
| Sector | | | | |
| Universities | | | | |
| Postgraduates | 230‡ | · | · | 230‖ |
| Undergraduates | 271 | · | 68 | 339 |
| Advanced further education students | 282 | · | 7 | 289 |
| Colleges of education | | | | |
| Residential students | 110 | 250 | 77 | 437 |
| Non-residential students | 373 | · | · | 373 |
| Weighted average for residential and non-residential combined | | | | 417 |

* Averaged over all students in each sector, whether or not maintained or resident.

† £2,000 per place, the cost for traditional-type halls, amortised over 60 years at 10 per cent, and weighted according to the proportion of students in residence.

‡ Because only about 55 per cent of postgraduates are supported by central or local government, the figure for postgraduates is lower than figures for undergraduates and further education students, a higher proportion of whom receive maintenance awards.

‖ The figure of total costs for postgraduates excludes the annuity equivalent of residential provision, owing to inadequate information on postgraduates in residence and varying conditions on which postgraduate residence is provided.

III.11 For future years, rising parental incomes are assumed to lead to an increase in assessed parental contributions to student maintenance, and to a corresponding reduction in public sector costs per student. For the purpose of this paper, a small sum, which increases over time, has been deducted from the average student award. In deriving marginal values for the residential element in student support, the hypothesis has been adopted that residential accommodation would be provided for 10 per cent of the additional students, all in traditional-type halls. Since in 1969 the proportions of students in residence ranged from 4 per cent of those in advanced further education to about 39 per cent of those in both universities and colleges of education, the projection implies a gradual fall in the proportion of students occupying hostel accommodation provided from public sources. The projections of expenditure on postgraduate student maintenance incorporate estimates of the expenditure by the Research Councils on awards to postgraduate students and on research training support grants to universities.

### Capital costs

III.12 For advanced further education the average capital costs per new teaching place (as set out in Table 14) have been multiplied simply by the projected increments in total places to provide projections of total capital expenditure. For universities, however, an extra element has been added. There have been exceptional capital items in recent years, which have raised expenditure in terms of the cost per new place substantially beyond the amount set out in Table 14. Outstanding among these are computer provision and the expansion of medical schools. In the future, likewise, it is expected that there will be a number of exceptional capital items not directly related to the cost of teaching places. To provide for this, 22 per cent has been added to the capital unit costs given in Table 14.

III.13 In both universities and advanced further education building for replacement and minor improvements has been assumed to be on a relatively small scale, and has been subsumed within the figures of capital costs per new place. The timing of capital expenditure in these sectors has been related to the expected incidence of requirements for new places, the first expenditure on a new place being incurred three years before the place is required, and, reflecting experience, the last finishing work being spread over into the year following the one in which the place is required.

III.14 In colleges of education, where a much smaller programme of building for future expansion is assumed but a good deal of building is at present in hand as a result of expansion over the past few years, a separate calculation has been made. This yields an estimate of total capital expenditure in colleges of education of about £6 million in 1971-72, tapering to about £2 million by 1981-82.

III.15 In the colleges of education and advanced further education the costs of new equipment are included in the capital costs per new place. For the universities, however, an annual amount per student is budgeted separately; this allowance has also been continued unchanged in the future.

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DEPARTMENT OF EDUCATION AND SCIENCE

# STUDENT NUMBERS IN HIGHER EDUCATION IN ENGLAND AND WALES

## A projection, with some discussion of its cost implications

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# FOREWORD

During the past year there has been much public discussion about the future development of the higher education system, particularly in view of the projected rapid increase in the numbers of school leavers and others with qualifications appropriate for entry to the various sectors of higher education. This paper outlines the results of a recent projection made by the Department to show, on the basis of a set of specified assumptions, the numbers of students for whom places might need to be provided in full-time higher education in England and Wales up to 1981 and the cost of providing those places. The projected numbers and costs are not a prediction of the future. They are essentially a medium to long term assessment and display one possible pattern of development. The immediate future is unlikely to be adequately represented in such a projection, but this does not invalidate the projection for later years. It must be stressed that this paper is a working document intended to assist discussion of these matters, and carries no implications whatever for future Government policy or finance.

The methodology of the present projection is akin to that used by the Robbins Committee, although the calculations start from later and more detailed information. The projection, being based in general on the future development and evolution of existing trends, implicitly ignores the possibility of introducing radically new policies on the entry to or structure of higher education; for example, no account is taken of any possible extension of the rôle of colleges of education. The relationship between the methodology here employed and that used by the Robbins Committee, as well as the relationship to other methodologies, is discussed in Chapters 1 and 2. The Department recognises the need to develop other approaches as and when resources become available for this purpose and the technical problems can be resolved.

The projections in this paper cover all full-time undergraduate and postgraduate studies in universities, all full-time advanced courses in the further education sector and all full-time initial training courses in colleges of education; sandwich courses are included under the heading full-time. The paper does not examine the rôle which part-time higher education could play in meeting the greatly increased flow of qualified school leavers, nor the rôle of the Open University. The geographical coverage is confined to England and Wales: higher education in Scotland is not referred to, apart from a brief reference in the concluding chapter.

**June, 1970.**

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